The Mining Journal

Established 1835 — Railway & Commercial Gazette

Vol. CCXLII No. 6181 — LONDON, FEBRUARY 5, 1954 — PRICE 8d

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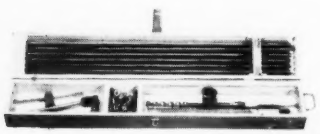

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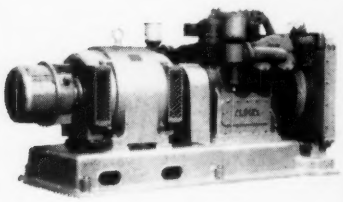

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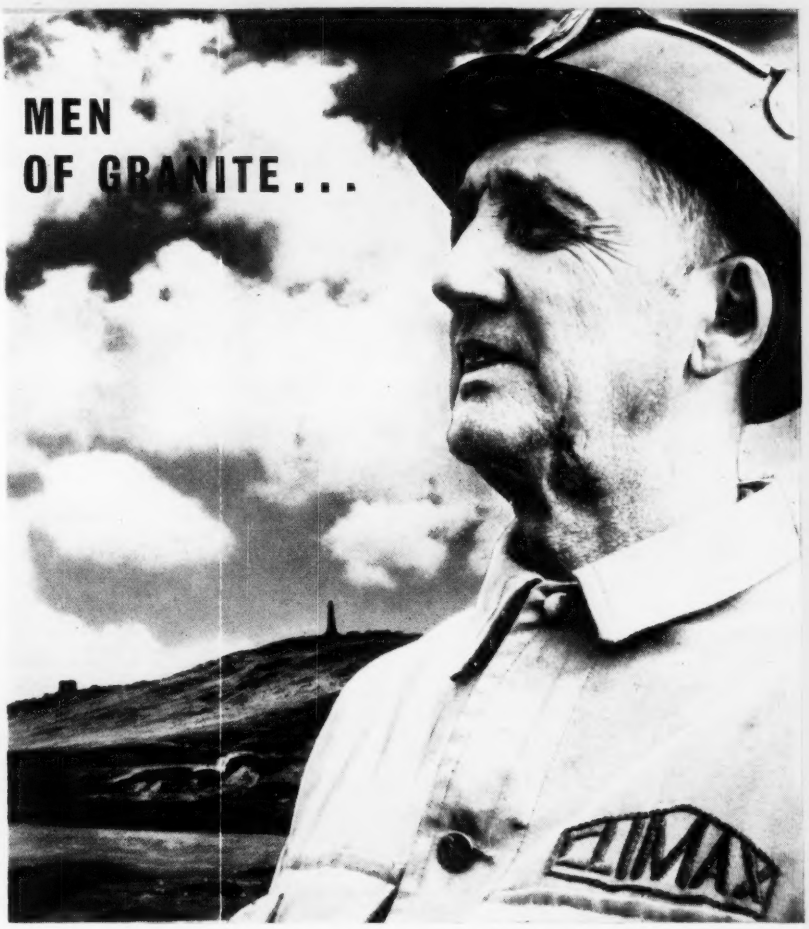

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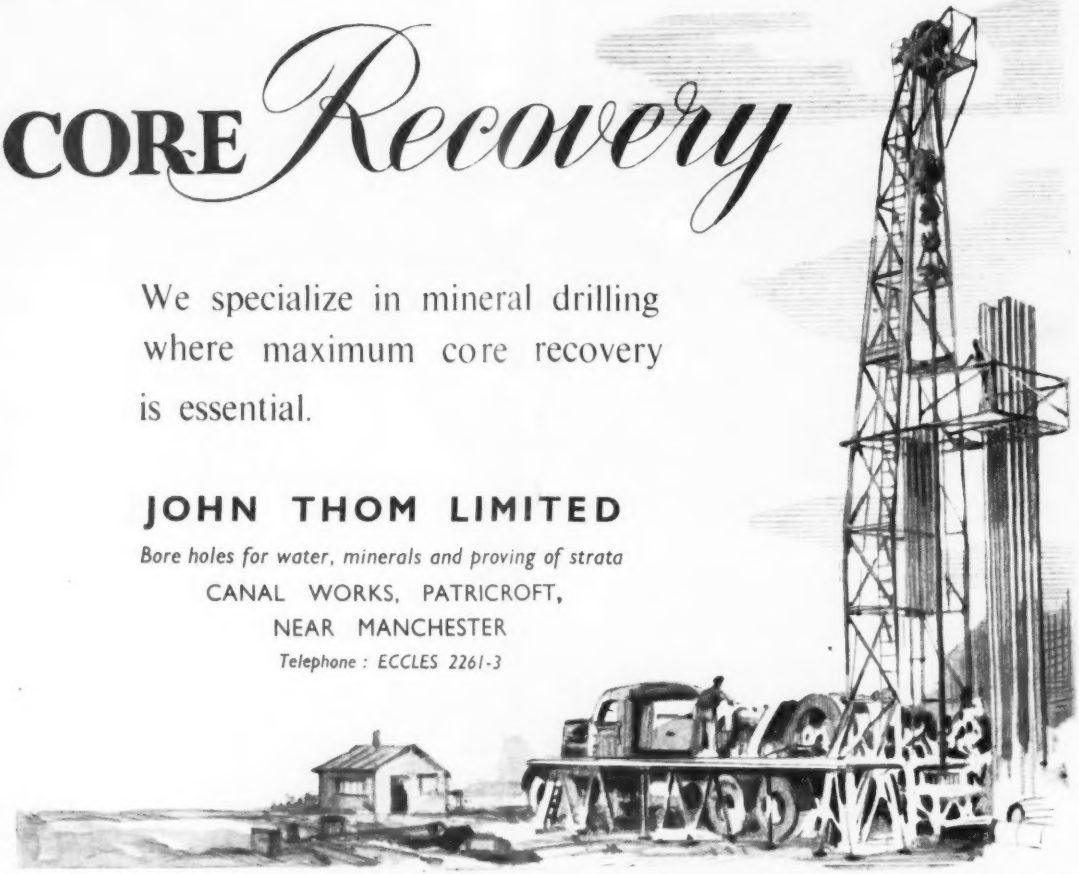

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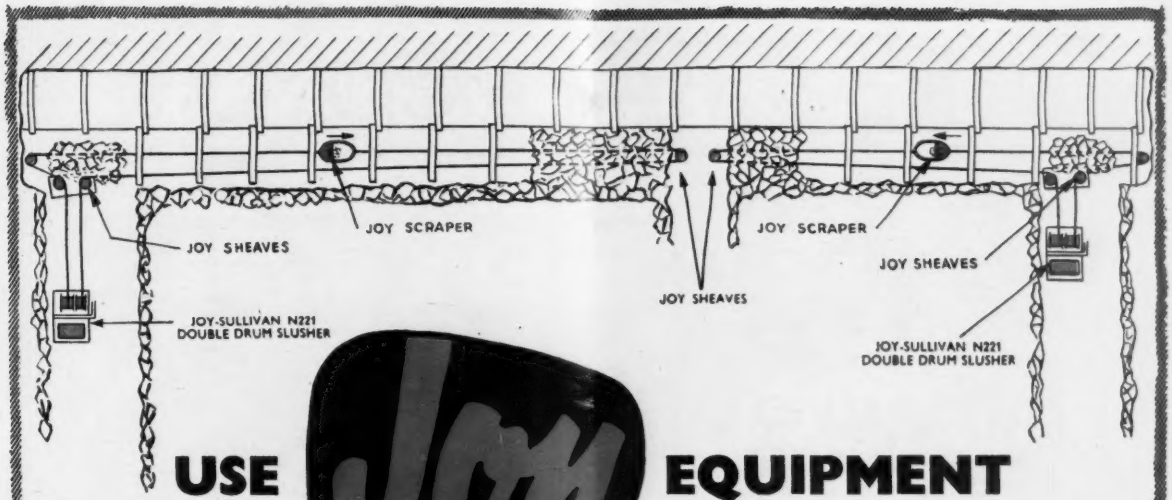

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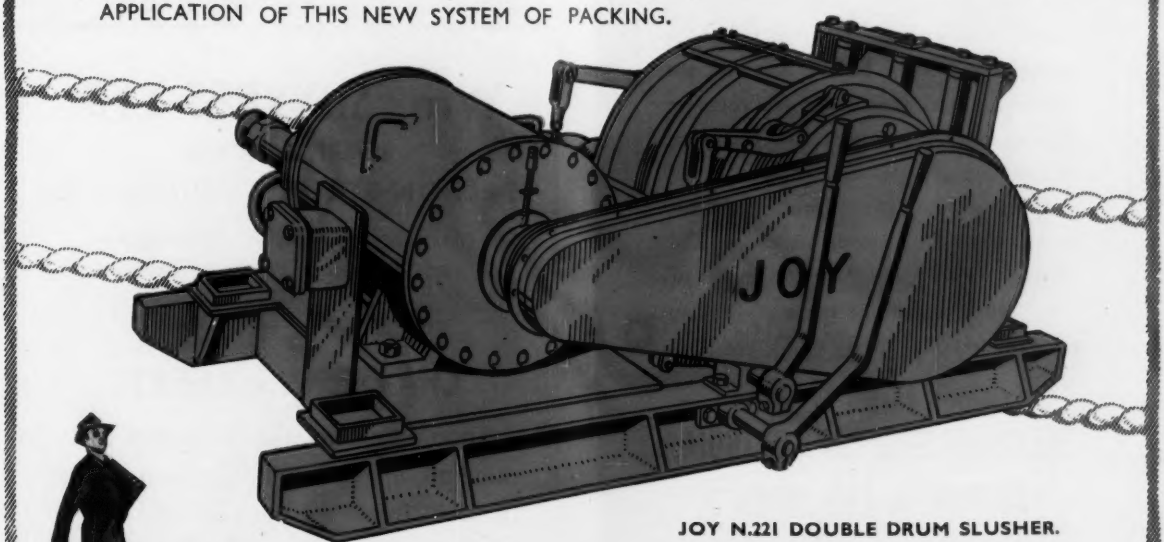

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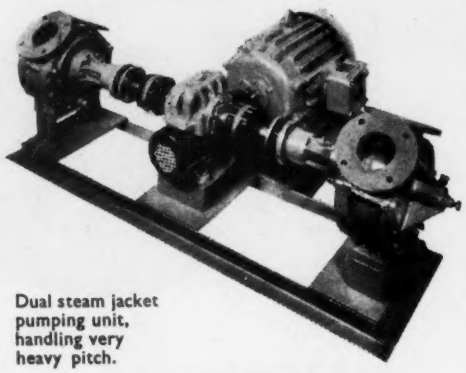

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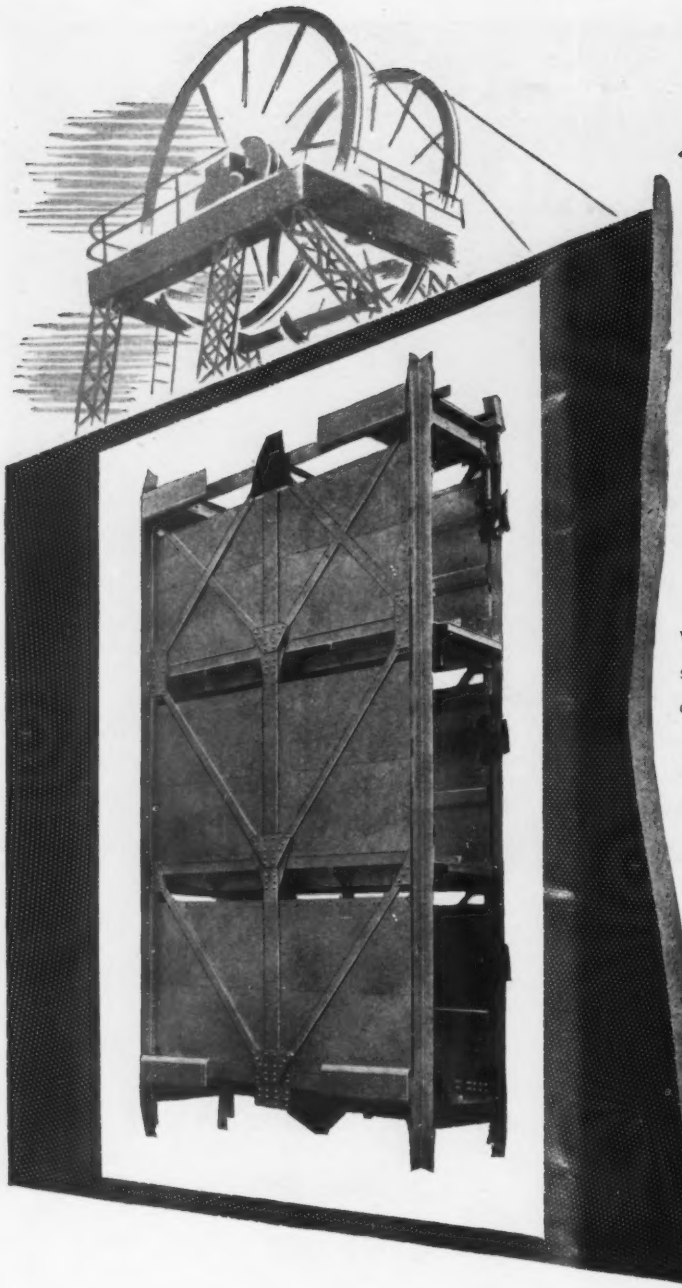

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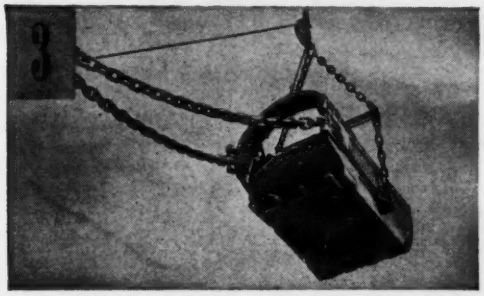

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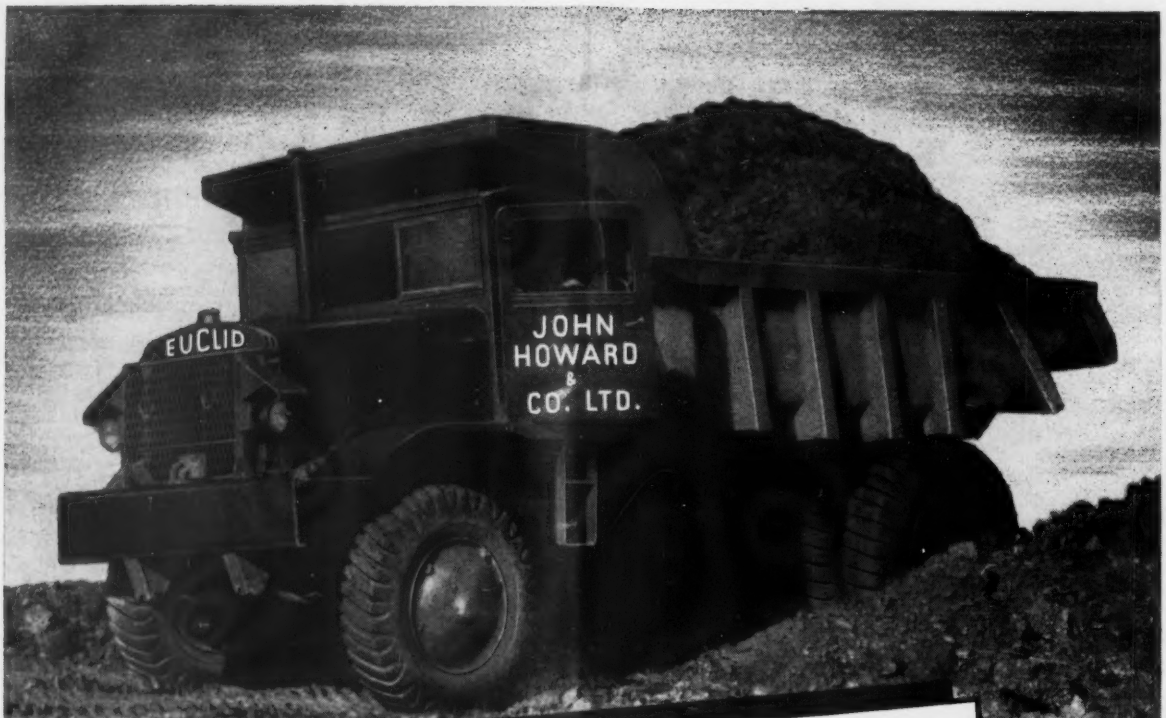

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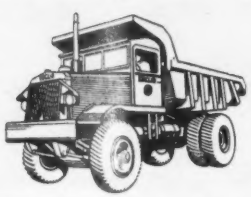

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The Mining Journal

Established 1835

Vol. CCXLII No. 6181 **LONDON, FEBRUARY 5, 1954** **PRICE 8d**

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NOTES AND COMMENTS

How Big Is The Free World?

Never very adept at interpreting American politics, the free nations of the Western world have been even more bewildered than usual by the recent spate of announcements, reports and messages emanating from Washington purporting to point to the course which the Republican Administration should pursue in its political and economic relationship with the rest of the world.

Much is hoped for, and with good reason. The Paley Report—a product of the Truman Administration—and the Douglas Report (sponsored by President Eisenhower) both presented in convincing terms the inescapable conclusion that U.S. foreign economic policy must be re-orientated to take account of the necessity—in some cases the desirability—of relying increasingly on foreign mineral supplies. Thus presented with a Democratic recommendation for the stimulation of foreign trade and the more intensive development of the raw material resources of the rest of the free world followed by a Republican sponsored report which endorsed these recommendations in all essentials, the outside observer might well be excused if he concluded that at long last the United States had shed its previous isolationist policies.

Yet the recently published Randall Report, although it too concurred that America had " become a consumer of more raw materials than it produces," showed unmistakable signs of the difficulty its authors have experienced in reconciling extreme, and apparently inflexible, Republican viewpoints with the realities of the situation.

The most recent of these reports from Washington—and the last, we hope, before the appearance of the national minerals policy which is now in the process of being drafted—is the report of the Malone Subcommittee on U.S. minerals. This is a subcommittee of the House of Representatives' Interior and Insular Affairs Committee, and it may be concluded from its title that it speaks for the domestic producers. If the advance " leaks " as to the contents of this report, which may not be published until the end of April, can be accepted as reliable, it would appear that the Committee has taken as its main theme the recommendation of a policy designed to erect a dollar wall around the whole of the western hemisphere, behind which the United States would actively stimulate the rapid development of all possible raw material resources in Canada and Central and South America. Thus it recommends that the western hemisphere could and should be self-sufficient in metals, materials and fuels. The international implications of this autarchical policy would be at once both drastic and far reaching. Indeed, one would have thought that the fundamental change which has taken place in the United States' domestic mineral supply-demand balance since the last Republican Administration came to power would by itself have been argument enough against aggressive protectionism. But, if so, this realization has been lost on the Malone Committee, who believe that the mineral needs of the United States could be supplied by the western hemisphere, although special consideration is expected to be accorded to imports of industrial diamonds from Africa, chrome from Turkey, and graphite from India. In line with such a policy the committee recommends that much more use should be made of domestic mines including high cost marginal mines, in support of which it is expected to plead that imports of minerals have caused much unemployment in the U.S. and have prejudiced the national defence effort.

The fallacy of any materials policy of self-sufficiency is, of course, that it is too expensive. While it is no doubt unfashionable and impolitic to quote the Paley Report in Washington to-day in support of any argument, the Paley Report pointed out that a 50 c. increase per barrel of petroleum, or 2 c. increase in the average price per lb. of all basic metals consumed in American industry would add to the United States' materials bill amounts of about $1,000,000,000 and $2,500,000,000 respectively. In other words, and apart from slump conditions, the import of raw materials at a price below that of domestic costs does not in the long run lower the American standard of living, but actually assists in raising it by reducing the cost of the finished article and by releasing high cost American labour for other productive activities demanding technical skills which could not, perhaps, be exercised at present by the exporting " Colonial " producers.

To plug any gaps which might in time weaken this overall policy, the committee recommends that the executive be divested of its power to tamper with trade and tariff issues. This recommendation, if adopted, would completely hamstring the Reciprocal Trade Agreements Act.

Finally, it is believed that the committee will recommend that future tariffs should be pegged to the U.S. cost of

production with import duties high enough to make foreign mineral supplies sell at the same price as the U.S. product. This would appear to concede the point that any policy of self-sufficiency would be extremely costly but it conforms to Republican thinking so well exemplified by the "infant industry argument" which necessarily entails the continual raising of the tariff wall to allow for the uneconomic production which would be involved if the Malone Committee's recommendations were adopted.

Fortunately the President's Cabinet Committee has access to other counsels than that of the Malone Committee in drafting its mineral policy. That being so, and provided that the final Bill represents a melangé of the recommendations made in the past 18 months from the Paley, Douglas, Randall, and Malone Reports, those pessimists on this side of the Atlantic who predicted that the Republican Administration would beat a hasty retreat behind a policy of aggressive protectionism may, fortunately, prove to be wrong.

New Gold Discoveries in Ceylon and India

That gold exists in commercially payable deposits in Ceylon has recently been indicated from assay values yielded from specimens of quartz taken from two districts in Central Ceylon, writes our Indian correspondent in a despatch received earlier this month.

As this type of quartz is widely distributed over the island, enthusiasm about the prospects of the young Dominion establishing a gold mining industry has been widespread. Dr. Kulartnam, who is a member of a panel of consultants of the American Institute of Mining and Metallurgical Engineers, believes that favourable geological conditions exist in Ceylon for occurrences of gold deposits and he has suggested that an immediate geological survey of gold occurrences in the country should now be undertaken. Furthermore, he has proposed the establishment of a Gold Development Corporation which would own and work the resources on behalf of the Government and our correspondent writes that he is prepared to lead a team of prospectors in search of gold in Ceylon.

History is also favourably disposed towards Dr. Kulartnam's beliefs, and it may well be that at some future date a gold mining industry will be established. If so, it would provide Ceylon with a valuable source of new wealth which could be relied upon to increase the economic strength of the country.

Meanwhile, its neighbour, the Republic of India, has announced that occurrences of gold have recently been discovered in the tertiary gravel deposits of West Bengal, Bihar and Orissa States. Mr. K. D. Malaviya, Deputy Minister for Natural Resources and Scientific Research, in making this announcement said that geologists came across this tertiary gravel whilst engaged in fieldwork along the western portion of the three States, and that on examination the gravels indicated mineralization contained to a depth of about 200 ft. Should this new discovery, on further development, prove that commercially payable deposits of gold do, in fact, exist, it would provide India with an alternative source of gold production to that of the long-established mines on the Kolar Goldfield which are showing signs of decline at the present fixed price of gold.

Southern Rhodesian Mining Prospects

Interesting information concerning the results of prospecting in Southern Rhodesia has been received by Mr. G. A. Davenport, Minister of Mines. Speaking at Marandellas on January 20, the minister said that there were in existence 12 exclusive prospecting orders covering 850 sq. miles of country, five of which were for copper prospecting, three for coal, one for iron and coal, one for iron ore, one for precious metals and precious stones, and one for scheelite and certain other associated minerals. The total expenditure specified by the Mining Affairs Board on the concessions was £187,000, but actually spending would be far in excess of this amount. It was too early yet to say whether any of the concerns would be successful, he added, but the information given to him was interesting. In addition, there were two large companies interested in developing other deposits, one tin, the other lithium minerals, at Bikita, and if finances permitted, an attempt should be made to obtain further information about coal deposits, so that the country would know approximately what reserves of high, coking and other coals existed.

Dealing with Wankie, the Minister said: "Unfortunately, the previous company to obtain control of the colliery did not live up to their promises of increased production, but from what I have seen of the new control I have far more confidence in their ability and promises for this year. We shall still not have all the coal we want until July, but matters will ease considerably from April on, and I fully expect that with their increased efficiency a lower cost of coal produced may do something to counterbalance other increases." On the question of gold mining, Mr. Davenport pointed out that unless working costs tended to drop "it may be desirable in the near future to re-introduce a modified subsidy, but it is impossible at the present juncture to promise assistance, for the finance of the territory and Federation is so much altered that it is a little difficult to make promises."

Canadian Metal Production in 1953

Preliminary estimates show Canada's metal production for 1953 declined slightly in value due to lower prices for zinc and lead, and also because of loss of production caused by labour strikes in Ontario and Quebec, writes our Canadian correspondent.

During the year the output of zinc rose to 797,650,000 lb. compared with 743,600,000 lb. in the preceding year, but the value of the 1953 output declined to $95,399,000 compared with $129,833,000 during the preceding year. Total mineral output for 1953 rose to $1,331,212,000 compared with $1,285,000,000 during 1952. Crude petroleum output reached the new record of over 81,000,000 bbls. valued at $198,000,000 compared with 61,000,000 bbls. valued at $143,000,000 in 1952.

In terms of values, the four leading minerals produced during 1953 were, petroleum $198,000,000; nickel $161,000,000; copper $151,000,000; and gold $140,000,000.

Progress on the Gold Coast

Earlier this week the Legislative Assembly of the Gold Coast held its final meeting before its dissolution and the introduction of a new constitution under which general elections are expected to be called for next June. In this connection, Reuter reports Sir Charles Noble Arden-Clarke, Governor, as saying that negotiations were still in progress with the British Government over the amending of the present Gold Coast constitution.

The Governor also said that arrangements had been completed for an investment survey of the Gold Coast to be carried out by a team of experts under the U.S. Foreign Operations Administration. While on the all-important question of the Volta River hydro-electric project, he declared that, barring unforeseen delays, the preparatory commission investigating this scheme would report on its technical and economic advisability before the end of the year.

Western United States

(From Our Own Correspondent)

Portland, Oregon, January 25.

Intensive prospecting for uranium ores continues, a potent inducement being the liberal bonus offered by Atomic Energy Commission for the first 10,000 lb. of U_3O_8 produced from a new mine. Countless discoveries have been reported, the true worth of which is yet to be proven, but definite figures on development and actual production, especially in the Colorado Plateau region, indicate that the latter may well make good on its claim to being, next to the Belgian Congo, the foremost source of uranium ore. Bonus payments to date in this region alone have exceeded $2,500,000. Mr. Charles Steen, mining engineer whose Mi Vida mine opened an entirely new district, testified recently before a Senate committee that the area in the immediate vicinity of the Mi Vida has in excess of 2,000,000 tons of uranium ore developed and can maintain a production of 1,000 tons daily. A.E.C. has initiated a $1,000,000 expansion programme for its plant at Monticello, Utah, which will involve a change from use of sodium carbonate or hydroxide to sulphuric acid leaching, the latter being better adapted to the ores recently developed in this locality. At Marysvale, Utah Vanadium Corporation of America has completed a 750 ft. three compartment shaft to connect with its 2,000 ft. haulage tunnel. V.C.A. has developed what is probably the largest pitchblende deposit in the country and is making plans for the erection of a large plant for treatment. In view of these present developments the Marysvale district can now be considered as proven as a definite and valuable source of uranium ore.

GOLD AND SILVER

Newmont Mining Corporation has purchased the assets of Goldfield Deep Mines Co. at Goldfield, Nevada, at mortgage foreclosure sale. This writes a final chapter of the second attempt to rejuvenate this famous old camp as a low grade producer. Goldfield was a high grade camp, in fact sensational, in its day and it was reasonable to suppose that large bodies of low grade would be found after the selective mining of the early days. Goldfield Deep was organized for this purpose and was financed by Newmont. Extensive exploration and development were carried on and a 100 ton mill built, but the project was finally abandoned. The previous attempt along similar lines was made by Eastern Exploration Co., a subsidiary of Calumet and Hecla Copper Co., but this was likewise unsuccessful.

THE COPPER INDUSTRY

Howe Sound Co. has made a contract with General Services Administration to deliver 18,700,000 lb. of copper from its Holden mine in Washington not later than December 31, 1955, at a price of 31½ c. per lb. The mine is currently producing 1,500 tons of ore daily and it is expected that maintenance of this output will enable it to meet the contract. All operations of Castle Dome Copper Co. (Miami) in Arizona were discontinued during December, 1953. The plant is being dismantled and moved with all equipment to the Copper Cities property of Miami. Both Castle Dome and Copper Cities are open pit operations with similar low grade ores. Copper Cities is expected to be in operation by autumn. Ultimate production is estimated at approximately 400,000,000 lb. of copper from ore averaging 0.7 per cent.

NEW LEAD-ZINC DEPOSIT

It would appear that Eureka Corporation (Ventures Ltd.) may see a gleam of encouragement after its five year battle with water at the Fad shaft in its efforts to rehabilitate the old Richmond-Eureka mine in the famous old Eureka district in Nevada. (*Mining Journal*, September 18, 1953.) Recent diamond drilling a mile north of the Fad revealed an ore body 12 to 15 ft. thick with gross values in gold, silver, lead and zinc of $100 per ton. The new orebody was found at a depth of 900 ft., above the water horizon that has caused so much trouble and expense. In Colorado American Smelting and Refining Co. has completed a 200 ton flotation mill and complete surface plant at its Keystone lead-zinc mine at Crested Butte but has ceased operations at its Ibex-Sunday mine in the Leadville district, and Callahan Lead-Zinc Co. has closed its Akron mine at White Pine after a year's struggle against adverse conditions. Both mines have been substantial producers. This seems to indicate a picture in which the operators see nothing to gain by carrying on under present conditions but are by no means pessimistic as to the future.

U.S. SHORTAGE OF TITANIUM PRODUCTION FACILITIES

Testimony before a Senate sub-committee on strategic minerals brought out the fact that the United States is far short of the facilities necessary for the production of titanium in quantities sufficient to meet the needs of the aircraft industry. On the recommendation of the Pentagon, General Services Administration has set an annual production goal of 25,000 tons to be reached in 1956 and maintained thereafter. G.S.A. will start negotiating contracts at once and is expected to advance substantial sums for plant construction and equipment.

IRON AND ALLOY METALS

After thorough exploration started eight years ago Colorado Fuel and Iron Co. expects to be on production in the near future from its new iron mine, the Comstock, at Iron Mountain in Utah. C.F. and I. has been shipping from its Duncan mine in this same district since 1942. Principal ore production of U.S. Steel's Columbia Iron Mining Co. is from three mines between the two C.F. and I. deposits. All operation in the district is open cast.

Manganese Ore Co. at Henderson, Nevada, has resumed kiln operation after the disastrous fire of last June. The company has a two month supply of concentrates accumulated during the reconstruction period which is expected to last until rebuilding of mill and crusher plant is completed. Salt Lake Tungsten Co. has started production at its 300 ton plant at Salt Lake City and has made an initial shipment of 25 tons of tungstic oxide in the form of synthetic scheelite. The company's plant at Glenn, Montana, is now on production and shipping concentrates. Indicating further diversification of its interests Kennecott Copper Corporation has purchased $16,250,000 par value of a new series of preferred stock and 100,000 shares of common stock in Kaiser Aluminium and Chemical Corporation. Kaiser now ranks next to Alcoa and Reynolds in aluminium production in the United States. Anaconda Copper is now building an aluminium plant in Montana so it may be that the copper companies are preparing against sharper competition from the lighter metal.

New Ore Storage Pocket at Roan Antelope Copper Mines

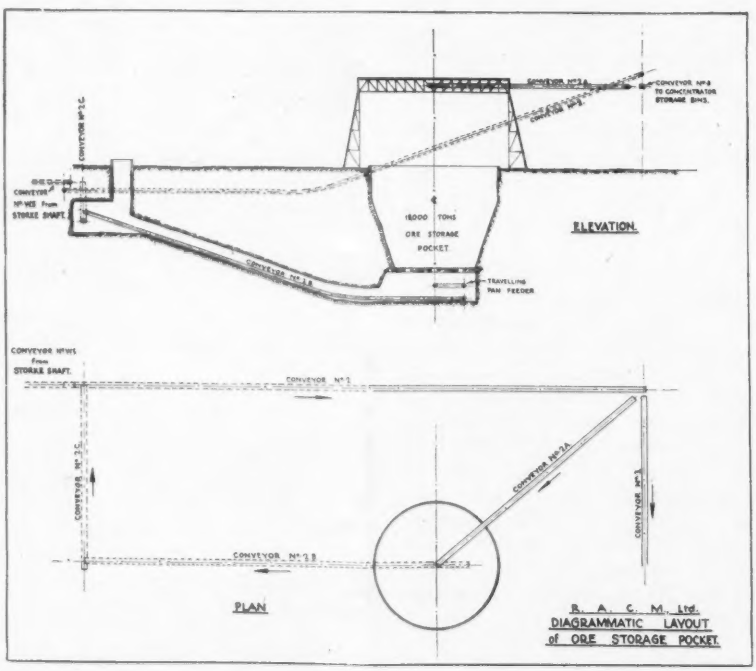
During recent years increased milling capacity without additional storage capacity for crude ore necessitated seven day hoisting from underground storage pockets at the Roan Antelope Copper Mines, Northern Rhodesia. This practice brought about a reduction in the time available for major overhauls of hoisting installations and surface transportation equipment. To overcome the difficulty, it was decided to provide additional storage capacity by the construction of an ore storage pocket on surface, that would feed the mill without resort to hoisting and crushing at the mine for at least one day in the week. The following article, prepared for *The Mining Journal* by the Roan Antelope Copper Mines, describes the design and construction of the pocket, the proposed conveyor system, and the ventilation facilities provided at the loading points at the bottom of the incline.

The necessity for additional surface storage capacity of crude ore—i.e. ore which has passed the primary crushers only—had been apparent at the Roan Antelope Copper Mines for some time due to the gradual increase in production without a corresponding increase in storage capacity.

The two producing shafts are Storke and Irwin, the former is approximately 1¼ miles and the latter 4¼ miles from the main sections of the concentrator. When the problem of additional ore storage first arose, the concentrator was handling about 12,500 tons of ore per day and a total live ore storage capacity of 18,500 tons was available, made up of 1,300 tons at Irwin Shaft headgear bins, 1,700 tons at Storke headgear bins, and 15,500 tons at the fine crushing and milling sections' bins.

The mill works seven days a week, and its present milling rate is 15,000 tons every 24 hours. Ideally, the mine provides this tonnage in six days, hoisting capacity being in the region of 20,000 tons per 24 hours. Surface transport by ore train and conveyor belt has a slightly greater capacity. However, due to limited surface storage it is necessary to resort to seven day hoisting from underground storage pockets, and this is undesirable as it means less time for major overhauls on hoisting installations and surface transportation equipment.

It was decided, therefore, to provide additional storage and many types of bin were considered, such as a steel bin completely above the surface; excavation combined with a steel bin above surface; a surface dump; and an excavated bin. After investigations the excavated bin was found to be the most practical and economical proposition and furthermore there was a suitable site adjacent to the mill. Work on an excavated bin was therefore put in hand in March, 1953.



The main bin consists of an excavated pocket, 109 ft. square to a depth of 25 ft., and subsequently circular and then oval to a depth of 56 ft. At this depth the size has been decreased in steps to 75 ft. along the major axis of the oval and 48 ft. across the minor axis. The major axis of the oval corresponds with the line of the conveyor tunnel beneath the bin. From 56 to 70 ft. depth the bin is coned to three drawpoints, 19 ft. 6 in. centre to centre, along the centre line of the draw-off conveyor No. 2B.

The bin was excavated to 25 ft. by means of an Eimco 104 rockershovel and (steam) dragline loading into lorries, much of the rock being used for road making. The 25 ft. high square sidewalls, which are at present being concreted, will support a corrugated iron housing and roof on a steel framework. Two towers on opposite sides of the square will support a gantry carrying the feed-in conveyor No. 2A, approximately 40 ft. above ground level. This conveyor will draw ore from the main conveyor from the mine at the point where it discharges into the concentrator bins, whenever the latter are full.

The nature of the rock encountered in the excavation will probably necessitate the concreting of the bin to its full depth and it is proposed to do this in 12 ft. vertical lifts working down, excavating and concreting in rotation. The wide angle between the drawpoints and the upper perimeter of the bin will, however, ensure that "dead" muck always covers the concrete lining, and it will thus not be subjected to wear.

The winze which will house the draw-off conveyor No. 2B was sunk on the incline to a vertical depth of 96 ft., and a level drive was developed from it under the bin. From this drive three raises were developed to the bottom of the bin (now at 25 ft. depth) and it is via these raises

that the rock from the excavation of the lower portion of the bin is being removed. A 30 h.p. scraper draws the rock from the bottom of the raises into two 1 ton skips, which are raised by two single drum 40 h.p. hoists. The skips tip into a 25 ton wooden storage box built so that lorries can run underneath it and draw off the rock as required, through compressed-air-operated doors.

The drive in which the scraper is operating will later be slyped out to the full size of the belt-loading chamber, 78 ft. by 17 ft. by 23 ft. high. This will be concreted throughout and will house the apron feeder which can draw ore from either of the three drawpoints in the bottom of the bin. Using the three drawpoints the "live" capacity of the bin, including a cone of ore above ground level, will be 15,000 tons, equal to approximately one day's mill consumption.

CONCRETE BY PNEUMATIC SUPPLY

The incline winze is being concreted 12 ft. wide by 9 ft. 6 in. high inside dimensions. This concrete is mixed on the surface and placed pneumatically through a 6 in. diameter pipeline. Near the upper end of this winze a transfer chamber is to be excavated, in which the ore from conveyor No. 2B will discharge on to conveyor No. 2C. This in turn feeds on to the main conveyor No. 2 from the mine to the mill. The excavation for the transfer chamber and for conveyor No. 2C will be opencut by dragline, and subsequently backfilled after concreting.

Near the discharge points of conveyor Nos. 2B and 2C two short vertical shafts, 12 ft. by 12 ft., and 12 ft. by 8 ft., respectively, will be concreted to surface for access, service and handling machinery.

A 2 ft. 6 in. gauge track will be installed in the incline winze beside conveyor No. 2B for handling machinery to and from the belt-loading chamber.

View looking north-west across the collar of the winze

Details of the three conveyors are :

	Width	*Horizontal Length*	*Slope*	*Speed*	*Capacity*	*Motor*
	Inches	*Feet*		*Ft./min.*	*Tons/hr.*	*H.P.*
No. 2A	42	196	—	400	1,200	20
No. 2B	42	303	1 in 3	300	900	125
No. 2C	42	125	1 in 3	300	900	50

VENTILATION

The dust created at the loading points at the bottom of the incline, at the transfer points and in the conveyor tunnel itself will be exhausted directly into metal hoods and ducting containing a centrifugal dust fan having a circulating capacity of 35,000 cu. ft. of air per min. The fan will discharge the dusty air into a dust filtration unit. The fresh air for the conveyor tunnel and transfer points will enter through the service and access openings. To ensure a supply of fresh air to the loading points at the bottom of the incline, a second metal duct will be installed through which 10,000 cu. ft. of fresh air per min. will be forced down to the bottom of the incline by means of a fan situated on the surface. About 2,000 cu. ft. per min. of this will be allowed to upcast to an exhaust point part way up the incline, thus preventing any possibility of dust created by the conveyor rollers downcasting to the loading operator.

A view of the main bin showing the 25 ft. high sidewalls

BELT CONVEYORS—VI

Idlers and Structure in the Conveyor System

By A. GRIERSON, B.Sc., A.M.I.Min.E.

The increased capacity and the abolishment of need for skirt boards are the prime benefits arising from the troughing of conveyor belts, while idlers play an important role in reducing friction. The following article, the sixth in a series of seven, discusses the factors governing the spacing of idlers as well as types of idlers available in modern conveying practice, and concludes by mentioning the structure of a belt conveyor unit.

The early forms of belt conveyors were made with the belt sliding along a flat, continuous surface, running between skirt boards the entire length of the conveyor, the return belt being supported in similar fashion. As was to be expected friction losses and belt wear were extremely high, which led to the introduction of rollers to support the belt, and subsequently to the gradual introduction of the high anti-friction idlers in use to-day.

Eventually, it was realized that troughing the belt results in increased capacity and what is much more important dispenses with the need for skirt boards.

Troughed belt upper idler sets may have 2, 3, 5 or even more separate rollers, depending on the width of the belt. Whilst the use of more idlers in the set gives a profile closely approaching the arc of a circle, this being the ideal condition as it conforms to the natural troughing of the belt, it is customary to restrict the use of 5 and 7 pulley idlers to belts having a width greater than 42 in. For belts having a width greater than 26 in. but less than 42 in. top idler sets usually have three pulleys, the inclination of the outer pulleys being 20-30° to the horizontal. Narrow belts frequently have only two pulleys ; inclination being in the region of 10-15°, this giving a semi-troughed effect. As is to be expected, the greater the number of pulleys on the idler set, the greater will be the cost of the set.

In order to prevent the belt from being nipped, the space between the rollers at the point at which the belt troughs, must be of the smallest possible dimension, usually less than ¼ in. and the included angle should not be less than 150-160°.

The dimensions of the idlers and return rollers vary with different manufacturers. For example, a 30 in. fully troughed belt may have idlers of 4, 5 or 6 in. diameter depending upon the individual maker. The lengths of the return rollers for the same belt width also vary, but in every case ample clearance is allowed between the edges of the return belt and the conveyor framework.

FRICTIONAL RESISTANCE

The frictional resistance of the idlers per foot run of conveyor depends upon the weight of the rotating components and the co-efficient of idler friction ; being expressed as :

$$F.R. = WC\frac{d}{D}$$

where W = weight of the rotating components of top and bottom idlers per foot run of conveyor.
C = co-efficient of friction of bearings.
d = diameter of bearings.
D = diameter of idlers.

The value of W is governed by idler spacing and also the material of which the idlers are constructed. The rolls are usually of steel as these give good wear and are light. If the conveyor is handling material such as salt or coke, or abrasives, cast iron rolls are often preferred. The diameter of the idlers is sometimes reduced in order to conserve material and to reduce the value of W. This has the effect, however, of causing greater wear on the ball races and spindle owing to the higher speed of idler rotation for a given belt speed. Where the conveyor is intended for heavy duty such as for transportation of rock or ore, the rolls are frequently 6 or 7 in. in diameter whilst for lighter duty the 4 in. diameter rolls are customary.

Where corrosion problems are experienced the surface of the idlers may be sand blasted and then coated with zinc. Alternatively, they may be covered with rubber. The idlers can be grease lubricated through nipples or they can be of the oil-filled type. The latter are becoming increasingly popular and have the decided advantage that they give many years trouble-free running without attention.

SPACING OF IDLERS

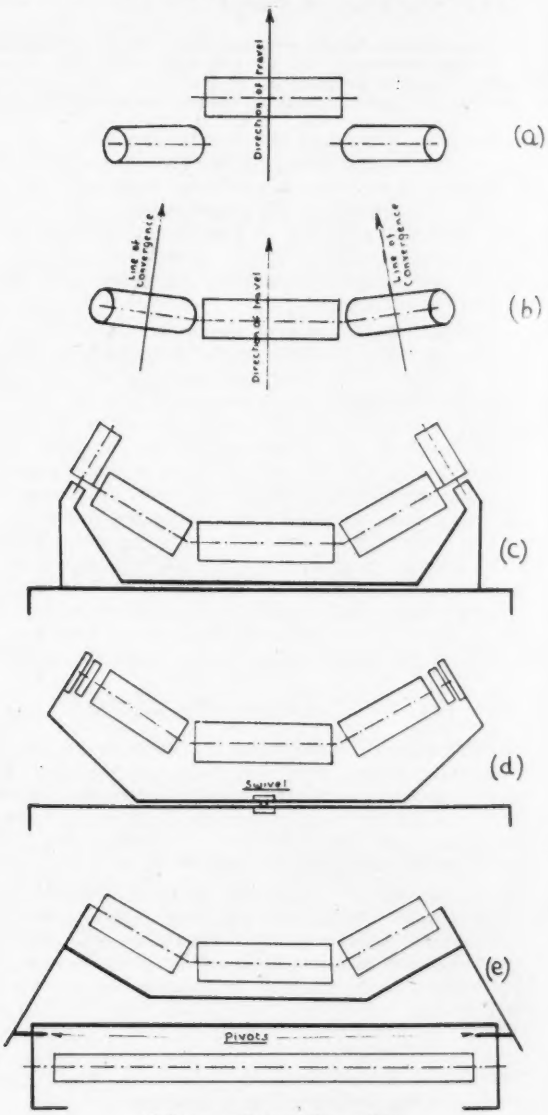
The spacing of the troughing idlers depends upon many factors such as the weight and width of belt, the load being conveyed and the speed at which the conveyor is travelling. The stress obtaining in any particular section of the belt also has a bearing upon the spacing of the idlers, at that point. Considering a conveyor driven at the head it is apparent that the maximum tension in the belt will occur at the point where the top belt is about to pass around the driving drums. Thus the idler spacing near the discharge end of the conveyor could be much greater than at the tail end, where the belt tension is considerably less and the tendency of the belt to sag correspondingly greater. This can be mathematically illustrated as shown.

The formula $D = \frac{WS^2}{8T}$ based on the properties of the parabola gives the sag of a suspended belt where D is the sag in feet, W is the weight of the belt and load in lb. per foot, T is the tension in the belt in lb. and S is the idler spacing in feet. Assuming the tension at the head and foot of a conveyor to be 3,600 lb. and 900 lb. respectively and the weight of belt and load to be 81 lb. per foot, if a belt sag of 1.5 in. be permissible then according to the parabolic formula in order that this belt sag of 1.5 in. is not exceeded the idler spacing at the head would be 5 ft. 8 in. and at the foot of the conveyor 3 ft. 4 in.

However, in practice there are many factors other than sag to consider. Idler spacing must be sufficiently close to prevent re-arrangement of the load on the belt as far as possible. This is caused by the belt flattening out between adjacent idlers. The resultant squeeze when the belt is troughed again at the succeeding idler requires power. Thus it is often false economy to increase idler spacing. On the balance side, increased spacing results in less cost for idlers and in less weight to be revolved by the belt. On the debit side, however, the increased suspended load between adjacent idlers causes harmful strain on the sets and what is of paramount importance greatly increased power may be required to drive the belt. This is adequately illustrated by the results of a test on a 48 in. wide horizontal conveyor carrying 1,400 tons per hour. In this instance top belt idler spacing was increased from 3 ft. 6 in. to 7 ft. with the result that the power required by the conveyor was increased by 20 per cent. Thus despite the fact that the load on the conveyor due to the rotating weight of idlers was halved, the resulting power absorbed in troughing the belt between the remaining idlers more than negatived any saving.

As belt tension in the return strand is much less and in view of the fact that weight per foot of belt run is small, idler spacing on the return run can be greatly increased. It is merely necessary to maintain the belt clear of the ground and to ensure its alignment. Return idler spacing is normally constant at about 9 ft. - 12 ft. Top belt idler spacing differs slightly with the various conveyor manufacturers and can easily be obtained from their literature. Common distances on say a 30 in. wide belt range from 5 ft. for material weighing 35 lb. per cu. ft. (loose) to 3 ft. 6 in. centres when carrying material weighing 125 lb. per cu. ft. (loose). These are average idler spacing intervals and can be varied at the terminals as previously indicated.

Spillage : The problems of preventing spillage on fast, high capacity conveyors is one that merits the closest attention, and the old axiom that prevention is better than cure rings very true in conveying. To prevent spillage entirely is difficult and would require perfect alignment of the conveyor and absolutely correct loading of material on to the belt. However, many conveyors do require a means of centralizing the belt and the tendency for a conveyor to run to one side is more pronounced on long narrow troughed conveyors with several auxiliary feed points. Most of the methods adopted to meet the contingency of maintaining the belt in correct alignment are by means of specially constructed idler sets. Various types of belt centralizing idlers are shown in the illustrations A to E opposite.



Belt centralizing idler rollers

TYPES OF BELT CENTRALIZING IDLERS

Staggered idlers : In this idler set the rollers are staggered, that is to say, the central or horizontal idler is placed behind the two inclined or wing idlers. The belt and its load thus run first over the wing idlers and then over the horizontal idler. This greatly assists in training the belt.

Wing idlers having a forward set : The main feature of this device is that, as the belt travels over the idlers, it has a tendency to converge to a distant central point, proportional to the angle at which the wing idlers are set. This angle is usually very slight, being in the region of 5°. The force exerted by the tilted idlers is at right angles to their axis and in the event of the belt running to one side, the force at that side increases, due to the increase in load upon it, and so guides the belt back into the centre. Both of these belt centralizing devices are confined to a belt running in one direction only. Where the conveyor is required to be reversible the following centralizing devices may be incorporated in the structure.

Vertical guide idlers : These are merely idlers of about 3 in. in diameter so placed as to make contact with the edge of the belt should the latter run too much to one side. Whilst they are effective, vertical guide idlers cause edge wear on the belting and their use is to be discouraged.

Swivel idlers : These idler sets are mounted on a large diameter ball thrust bearing enabling them to swivel easily about a vertical axis. Dirt is prevented from reaching the ball bearing by a grease labyrinth. In the event of the belt running to one side a greater force is exerted on the roller at this side due to the increased load. This tends to slew the idler set. With modern idler rollers, however, fitted with anti-friction bearings, the turning moment caused by the additional load on one side is insignificant, and may prove inadequate to slew the set.

In some swivel idlers the wing idlers are shorter than is usual. In the event of the belt running an inch or so to one side it bears on the face of a plain bearing roller carried by an outrigger. This plain bearing roller having a much higher frictional resistance than the ordinary idlers, creates an increased turning moment which is sufficient to slew the idler set immediately. The angle at which the idlers are then placed quickly guides the belt back into the middle and so the outrigger roller comes to rest and equilibrium is restored.

In the event of the swivel bearing becoming choked with dirt it may prevent the belt from slewing even when the outrigger roller starts turning. In this case the belt will continue to deflect until the edge bears against the solid flange on the outrigger. This very much greater turning moment will then slew the idler set.

Tilting idlers : The principle of this is that the top idler set is mounted on vertical arms which pivot on spindles set low down on the frame of the roller stool. This allows the entire carrier frame to lean forward in the direction in which the conveyor is running, and thus in plan view, the outer roller appears to have a forward set as in a standard non-reversing conveyor. The distance the carrier frame moves is very small but is sufficient to give a 5° set to the wing idlers, which, in the event of the belt not running true, guide it back to its correct course again.

Adjustable idler brackets : Idler sets may be carried on brackets having slotted bolt holes, thus permitting a degree of flexibility, as the brackets can be adjusted individually to give true running of the belt.

If satisfactory running is to be obtained with belt conveyors it is essential that the following points be carefully observed:

(a) Keep the conveyor in a straight line;

(b) cross level the conveyor sections;
(c) cut belting perfectly square as faulty joints contribute greatly to untrue running of belts;
(d) keep rollers well lubricated and free from accumulations of dirt;
(e) ensure correct feeding of material on to the conveyor.

Rigid adherence to these requirements for efficient conveyor running will reduce the need for the above centralizing devices. However, it is commendable practice to install a swivel or tilting idler immediately outbye of each intermediate transfer point on the conveyor.

THE CONVEYOR STRUCTURE

The structure or frame work of the conveyor serves to carry the idler sets and maintain rigidity throughout the length of the belt. Conveyor structure is usually constructed in short lengths of say 9 ft. to 12 ft., these being convenient sizes for handling. When bolted or connected together, these units form a light, rigid backbone, giving exact alignment in plan while permitting the necessary flexibility in elevation.

Many conveyor structures in use at the present time are in the form of inverted steel plate troughs coupled together by angle feet. The top belt is carried by troughed idler sets, the brackets of which are bolted on to the upper surface of the steel troughs ; the bottom belt running inside the trough. Thus the bottom belt is absolutely isolated from the top belt and material falling from the upper strand cannot be carried into the tension end by the lower strand.

Complete enclosure of the bottom belt has the disadvantage that in the event of a belt break in the return strand, immediate inspection is prevented, and consequently in some designs of belt structure a gap is left in between each section at the angle feet. This gap is covered by an easily detachable cover plate.

Alternatively the structure may be of the locked louvre plate type. These louvres slot onto lugs or projections on the idler set stands and thus maintain a rigid conveyor framework. They are easily removable and the small space between the top edges of the two opposite louvres enables the bottom belt to be inspected when the conveyor is in operation.

Geology of Australian Ore Deposits

At the fifth Empire Mining and Metallurgical Congress held last year in Australia, the papers presented dealt entirely with mining and metallurigcal practice and ore deposits relevant to Australia and adjacent territories. In the following article, Dr. G. A. Schnellmann gives a brief review of the matter presented in the first series of papers presented at the conference, now published under the title *Geology of Australian Ore Deposits*, and emphasizes the fact that general progress follows mining development.

In organizing the Symposium the committee drew its inspiration from the Canadian Institute's *Structural Geology of Canadian Ore Deposits,* an excellent model ; and had as its primary object the presentation of " a geological account of mineralization in Australia, with emphasis on the factors that have controlled ore-deposition, in so far as they are known," a commendable approach, with the sting in its tail. Much care was taken to ensure that the individual articles were prepared by the men most conversant with the particular subject, the natural result being that for the most part the working mines have been described by the resident or consulting geologists, and the dormant areas by Government or University geologists. The patchwork record of individual mines is held together by comprehensive articles descriptive of district features, and hemmed about by two general articles on The Mineral Resources of Australia and Tectonic Setting of Australia Ore Deposits respectively. No startlingly new facts or fundamental concepts are announced, nor were they to be expected in this context, but there is much previously unpublished material. A particularly interesting hypothesis, in view of recent publications on the Northern Rhodesian copperbelt, is that the Broken Hill lead-zinc deposits may have syngenetic affinities. Broadly speaking, and although the title of this volume does not beg the question as its Canadian prototype seemed to, the conclusion seems to be that structure is the most important control of ore-deposition.

The success which has attended the practical application of this empirically established relationship since its inception a few decades ago seems to have repressed interest in other possible approaches, and probably not until it shows a sign of seriously diminished returns will the fundamental approach advocated by Sullivan at the Empire Mining and Metallurgical Congress in 1949 command greater interest. Tending to this is Professor Sherbon Hills' conception of orogenic belts, with their associated metallogenies, moving progressively eastwards across Australia through geologic time, and it would be interesting to know whether he regards the active vulcanicity in New Zealand as the most recent manifestation of this. He lists no fewer than ten such metallogenetic epochs and draws attention to certain associated geochemical peculiarities, pointing out that these may be more apparent than real in that erosion has not reached the same relative depth in all areas. His comment, that concerning ore-genesis much is still highly controversial, is true not only of Australian fields, and it will be universally agreed that much more detailed knowledge of structure, petrology, and geochemistry is required.

Dr. Raggatt, by taking as his theme the *mineral* resources of Australia, widens the scope of the discussion and thereby lends perspective, for with the exception of the rather special case of gold, coal is shown to have the highest recorded total value of mineral production up to 1950. It is closely followed by lead-zinc-silver, an indivisible trio which currently holds first place in value of annual production. Incidentally, the tabular statement of production gives rise to some uncertainty by stating values in £ sterling, whereas a later table quotes £A, which one would expect in this context. It is perhaps a minor point, since it does not affect things relatively but it would have been helpful to know whether the products were valued at current or contemporary prices, and even more so to have had a parallel column giving units of weight—tons, lb., oz., etc.

VALUE OF MINERAL EXPLORATION

Of only three significant mineral discoveries in Australia since 1983, the most recent was made over a quarter of a century ago. This admittedly seems to ignore the uranium discoveries, which may have been on the security list when the statement was made, but this unique material can be ignored in the immediate context.

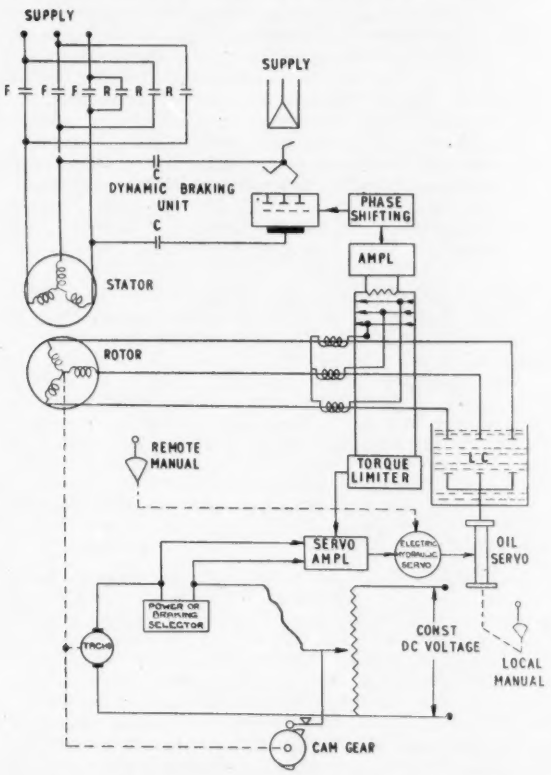
From the national standpoint the value of mineral exploration is not limited to the discovery of new ore-bodies. In the case of Western Australia, for example, the railways " were designed to serve the goldfields, and in so doing have assisted in the pastoral development of the State." Some mining towns have disappeared, but others have " grown into large cities to serve the interests of agriculture which developed around them as gold mining declined." This creative effect of an industry which is so often accused of being essentially destructive is just cause for pride.

MACHINERY AND EQUIPMENT

An Automatic A.C. Winder

For some considerable time the economic advantages likely to arise from using A.C. instead of Ward-Leonard drives for automatic winding have been recognized, and the N.C.B. is now recommending that all new winders shall be capable of being made automatic. Automatic winding is of interest to mining engineers whether they be engaged in coal or metalliferous mining operations.

Early in 1953 Metropolitan-Vickers successfully commissioned a 1,225 h.p./6.6 k.V. automatic A.C. winder at Lynemouth No. 2 shaft in the Newcastle district. In addition to automatic control, the winder is equipped for manual control, either from the engine house or from bank, and it is also provided with dynamic braking on the Metropolitan-Vickers " transductor-controlled system " with D.C. supply from a grid-controlled mercury arc rectifier. This is the first winder employing closed loop speed control to be manufactured and installed in the U.K. since the war, and the first automatic winder in the world to employ dynamic braking.



Schematic diagram of automatic A.C. hoist control

Local manual control is provided for use when carrying out special maintenance work, and not for normal winding operations, while remote manual control is provided for normal men and service winding. An electrical control lever and a mechanical brake lever are installed at the bank position and these operate through remote control servos to the winder house. For remote operation of the mechanical brakes the remote brake lever is coupled through gears to a power Selsyn, which in turn is connected electrically to a receiver Selsyn situated in the winder house. The receiver Selsyn controls the position of the control valve of the brake engine, and thus, for every movement of the remote brake lever there is a corresponding movement of the mechanical brake in the winder house.

The primary function of the Lynemouth winder, the raising of coal in 5-ton mine cars is done automatically in response to pushbuttons operated by the banksman, who, in addition to starting the winder, operates the car tippling arrangement. Automatic winding is carried out on the closed loop system, in which the required speed signal, derived from a potentiometer actuated by unidirectional cam gear, is electrically compared with the actual speed signal, derived from a tachogenerator driven by the winder; the error signal resulting from the difference in speed is used to operate the liquid controller. To do this the error signal is amplified and fed to the electro-hydraulic servo, which in turn actuates the controller. The torque applied to the winder depends on the magnitude of the speed error, and the selection of power or braking torque is determined by the polarity of the error. A torque-limiting circuit prevents the winder from being subjected to more than twice full load torque.

In order to simplify the scheme, acceleration control is not fitted, and when on automatic operation the winder is allowed to accelerate freely, whether raising or lowering, under the influence of the available torque; thus it is governed only by the peak torque permitted by the control system.

For raising loads the motor is run at subsynchronous speeds as on a normal winder, but for the lowering wind it was considered that a more economical arrangement would obtain if the motor was allowed to run above synchronism, i.e. regenerating. Accordingly, the control system is arranged so that when lowering a load the motor operates regeneratively during the full speed period. Whether raising or lowering, the winder is retarded by dynamic braking.

A High-Reach Discharge Loader

The bucket of the High Discharge Merton Overloader discharges at a height of 12 ft. 6 in., as against 8 ft. 6 in. on the standard model, and the concessionaries, Mackay Industrial Equipment Ltd., state that this discharge height is higher than that of any tractor-mounted loader. The straight line loading principle which the Merton Overloader originated—loading the bucket at the front, conveying it over the driver's head and discharging at the rear—is now well known.

These high discharge machines have been supplied by Scottish Land Development Corporation, distributor in Scotland for the Merton Overloader, to Scottish Special Housing Association.

The construction and uses of the Merton Overloader have been previously mentioned in different issues of *The Mining Journal*, and readers may recall that the patented unit is designed for use with the Fordson Major tractor. The operating principle of the loader allows the bucket to be " crowded," and thus a maximumf load is obtained, while at the same time the application of the principle permits the machine to operate in narrow cuts and confined spaces where the only limitation is the width of the machine itself. It thus would seem to have applications of use in the quarrying industry and at the surface works of a mine.

Helical Gear Units

In almost every field of industry, including the mining industry, the available sources of power call for some adjustment in speed between prime movers and driven machinery in order to secure economical working whilst allowing the latter to operate at designed speeds. For this purpose, totally enclosed gear units in conjunction with economically designed price movers have now largely superseded belt, rope and chain drives, or open gearing. A comprehensive pamphlet, published by The David Brown Corporation (Sales) Ltd., gives details of the comprehensive range of helical gear units manufactured by the Corporation.

These units include the H, HO ranges and the HD double stage equipment, as well as turbine gear units co-axial and helical gear units and various couplings. Among these equipments, double reduction helical units operate tube mills and compressors.

METALS, MINERALS AND ALLOYS

COPPER.—Cutbacks in U.S. domestic copper production, either made in recent weeks or scheduled for this month, total around 6,200 tons per month equivalent to a reduction of some 7 per cent from the previous rate of production. Of this amount, over 5,000 tons are accounted for by cutbacks at Kennecott's four domestic mines, representing about 14 per cent of this group's output, which, in the main, is being brought about by a reduction of the working week from 48 hours to 40.

In the case of Kennecott, the decision to make these cutbacks has no doubt been influenced by the considerable accumulations of unsold copper, now estimated at around 40,000 tons, held by its Chilean subsidiary, the Braden Copper Company, in the latter's warehouses in Port San Antonio. This represents over three months' production from the El Teniente plant, which is for the moment working at the minimum capacity compatible with retaining the working force.

More generally, it should be remembered that some, if not all, of the big copper groups have new high-cost mines coming into production, with guaranteed floor prices at which output can be sold to the Government in default of private buyers. Under existing easier market conditions this no doubt seemed a good opportunity for hours of work at the older mines to be reduced to more normal levels.

Meanwhile, London and Continental prices have firmed up considerably during the past week and for the moment there are no further signs of a break from the 30 c. level in the States, despite the fact that January deliveries were even worse than expected, and fell below 70,000 tons. Two short-term factors have no doubt helped to bring this about. In the first place, the Chilean Congress adjourned last Tuesday until March 1 without having taken any action on the impending legislation revising the Government's fiscal arrangements with the American copper companies. This suggests that the question of the disposal of surplus Chilean stocks may now be deferred at least for another month.

A second bull point for copper, although an unwelcome one, has been the strike at Wankie Colliery which developed last Monday, and which is reported to have affected the entire African labour force of over 9,000. Wankie has been placed under police control and the Southern Rhodesian Territorial Force has been called out. This is probably indicative of the Government's determination to take no chances with Rhodesia's top priority industry rather than of any immediate threat of disturbances. Indeed, the Prime Minister of Southern Rhodesia, Mr. Garfield Todd, who flew to Wankie on Tuesday, is reported to have said that the strikers were very well behaved.

Both Government and mines officials are understood to be having some difficulty in ascertaining the precise nature of the strikers' demands, or in establishing contact with the effective strike leaders—there being of course no trade union organization comparable with that on the Copperbelt. The strike seems to have originated with a number of boss boys who led the walk-out on Monday. Considerable increases in pay are apparently being demanded, including a cash payment of between 3s. and 5s. per day, in place of the free rations at present provided. The company is understood to be opposed to this latter demand and the grounds that the present system at least ensures that the natives are adequately fed. Native workers at Wankie are among the best paid and cared for in the Territory and this in itself must make the problems of meeting their demands more difficult.

The European personnel at Wankie have so far been able to keep the highly mechanized No. 2 Colliery in production at the rate of about 2,400 tons per day compared with the normal 7,500 tons per day. Additional European labour is volunteering for the mines but the European Mine Workers' Union on the Copperbelt is reported to have refused to allow its members to respond to this call.

So far the effect of the strike on the Copperbelt has been an immediate cut in production at all the mines following a ban on Monday night on the shipment of coal from Wankie to Northern Rhodesia. The mines are believed to have about 7 days stocks on hand and a strike lasting longer than this would entail cuts in power supplies.

LEAD.—Demand is reported to have been fairly firm this week in the States although export sales were much thinner than in recent weeks. Lead dealing on the West Coast last week are reported to have been effected by the arrival of a considerable tonnage of refined metal from Australia causing the A.S. and R. to reduce its selling price in California by ½ c. below the current New York rate of 13 c.

Replacement battery shipments last year totalled 23,600,000 units against 22,450,000 units in 1952.

TIN.—There has been virtually no tin news during the past week and turnover on the London Metal Exchange has been small. The industry is no doubt still trying to digest the implications of the Randall Report's opposition to commodity agreements. Meanwhile, control scheme or no, cash tin remains tight in London with a backwardation of over £20.

According to a recent statement by the R.F.C. stocks of ore on hand at the Texas smelter are enough to ensure its continued operation at its present rate for another three or four months. Moreover, ore is still arriving under the Bolivian, Congo and Indonesian contracts. Despite the implications of President Eisenhower's budget message reported here last week, the R.F.C. is clearly seeking to convey that the closing of the smelter is by no means a foregone conclusion and hinting that its operation may be continued by another agency after the R.F.C. ceases operation on June 30.

Meanwhile there is still no news of Washington's impending negotiations with Indonesia on the price basis for third year deliveries under the R.F.C. contract with that country. Production in Indonesia totalled 33,752 tons last year compared with 35,003 in 1952. Of last year's output, 21,329 tons came from Banka and 12,423 tons from Billiton and Singkep.

ZINC.—The demand for zinc has been better this week in the States with the 9½ c. basis for Prime Western looking rather firmer. The rate of sales is reported better than for some months past although still short of smelter intake. It has been apparent for some time that at anything below 10 c. there is going to be a sharp contraction in output, and point is lent to this view by the announcement that the American Zinc, Lead and Smelting Company is closing its Hillsboro plant in Illinois and its Graselli mine in Tennessee indefinitely. The former is producing about 650 tons of slab per month. It may well be that zinc prices have now just about touched bottom.

PLATINUM.—The spread in the U.K. platinum price, which has been running at £27/£33 5s. for some time past, closed up this week to a £30/£33 basis as a result of Johnson Matthey advancing their price by £3 per oz. At the same time, London's other leading dealer, Baker Platinum, have reduced their price this week by 5s. In announcing their price increase, Johnson Matthey recall that increased output from the Rustenburg mines has enabled them to maintain a steady price over the past three and a half years and that it is only now that an appreciable rise in the level of working costs has made some price adjustment necessary. The company still adheres to its policy of making platinum available at as low and stable a price as possible.

The offers of Russian platinum in the American market, referred to here last week, are apparently continuing to have a depressing effect on the New York market although no business is as yet reported. Prices are more or less nominal at $90/$92 and it is probable that platinum could be bought in New York to-day below this price.

Total sales of platinum group metals for U.S. industrial use in the first nine months of the last year showed an increase of 12 per cent over the corresponding period of 1952, while imports in the same period were 31 per cent higher. These figures, however, disguise the fact that there was a marked falling off during the third quarter in sales of all metals in the group, other than paladium, and it may well be that the results for the year may not prove to have been substantially better than for 1952.

Iron and Steel

Fears of a recession in the iron and steel industry, if not definitely dispelled, are certainly receding. Production is maintained at or near peak levels, there has been no slackening in the flow of specifications from home sources, and the most encouraging feature of the export trade is the heavy volume of orders for black and galvanized sheets. Export quotas for the first six months of the year have in some cases been fully sold, and further inquiries from South America and Australia, convey the impression that if supplementary quotas are granted, there will be no difficulty in disposing of further tonnages.

The position in the re-rolling industry presents a marked contrast. Export business in merchant bars is almost as dead as a door nail, simply because of the desperate price cutting to which Belgian bar exporters have resorted.

The official British export price for small bars is £35 per ton whereas the Belgian price f.o.b. Antwerp is £28 10s. and it is reported that even this minimum has been broken to the extent of 20s. per ton. Under these circumstances the prospect of a revival in this branch of the industry would appear to be remote.

The comparison moreover tends to deepen the anxieties concerning the prospective rate in railway freight charges and its effect upon British steel prices. It is obvious that an advance in steel prices at this juncture would be most unopportune and hopes are still entertained that the industry may be able to absorb the extra cost of production.

The severe weather has interrupted the regular flow of raw materials to the iron and steel plants and also the distribution of finished products. But these interruptions have had little effect upon current production because works executives have been able to draw upon extensive stocks of iron ore and scrap.

The London Metal Market

(From Our Metal Exchange Correspondent)

The main feature during the week has been the general rise in the copper market, which has proved right those dealers who considered that a London cash price of under £220 per ton was too low if outside conditions remained unaltered. If anything, demand for copper has increased in Europe, and supplies at under the ruling American export price have become almost non-existent. This has caused more demand in America, and the rise has been consolidated through the raising of the prices smelters are paying for the better grades of scrap. Other "bullish" factors have been the strike at the colliery in Rhodesia, which must affect copper production if it goes on, and also the news that the Chilean House of Representatives is unlikely to meet until early March, which means that no decision is likely to be taken on the disposal of the ever-mounting tonnages of copper which will have to be sold one day.

Lead and zinc have both remained without any interesting features, but the turn of the month has seen no diminution in the backwardation and it is, therefore, probable that this will increase in the case of both metals during the month.

The tin market has been featureless, with a small turnover and a price rise in sympathy with that in copper. On Thursday the Eastern market was closed.

Closing prices and turnovers are given in the following table:—

	January 28		February 4	
	Buyers	*Sellers*	*Buyers*	*Sellers*
Tin				
Cash	£643	£645	£650	£652½
Three months	£627½	£630	£630	£632½
Settlement	£645		£652½	
Week's turnover	470 tons		405 tons	
Lead				
Current month	£83½	£83¾	£81½	£81¾
Three months	£83	£83¼	£81¼	£81½
Week's turnover	4,825 tons		1,975 tons	
Zinc				
Current month	£72½	£72¾	£71¾	£72
Three months	£70½	£71	£70½	£70¾
Week's turnover	3,475 tons		2,600 tons	
Copper				
Cash	£221	£222	£225½	£226½
Three months	£208½	£209	£212½	£213
Settlement	£222		£226½	
Week's turnover	4,150 tons		5,650 tons	

U.K. METAL & MINERAL IMPORTS IN 1953

	Units	*December 1953*	*Jan.-Dec. 1952*	*Jan.-Dec. 1953*	*Increase or decrease in 1953 over 1952*
Non-ferrous Metals and manufactures:					
Aluminium and alloys	Cwt.	299,834	4,746,730	3,576,165	—1,170,575
Bismuth*	Lb.	80,568	510,783	535,393	+ 24,610
Cadmium**	Lb.	106,501	1,390,798	939,993	— 450,805
Cobalt and Alloys**	Lb.	714,506	3,362,445	3,491,289	+ 128,844
Copper: Electrolytic	Cwt.	347,369	4,145,080	4,415,904	+ 270,824
,, Other	Cwt.	293,745	3,508,080	2,309,478	—1,198,602
Lead	Cwt.	353,337	2,938,880	3,595,541	+ 656,661
Mercury	Lb.	172,279	700,066	1,621,812	+ 921,746
Nickel	Lb.	15,275	139,561	181,732	+ 42,171
Tin	Cwt.	500	57,400	20,781	— 36,619
Zinc	Cwt.	299,545	4,577,040	2,609,872	—1,967,168
Ores and Concentrates:					
Antimony ore and conc.	Tons	276	17,590	7,519	— 10,071
Bauxite	Tons	11,632	282,930	268,866	— 14,064
Chromium ore	Tons	11,325	167,563	160,238	— 7,325
Iron pyrites†	Tons	73,675	505,101	385,885	— 119,216
Manganese ore	Tons	67,349	431,841	496,411	+ 64,570
Molybdenum ore	Cwt.	6,741	65,322	78,574	+ 13,252
Nickel ore, conc. & matte	Tons	2,730	33,835	33,879	+ 44
Tin ore & conc.	Tons	6,333	55,084	62,342	+ 7,258
Titanium: Ilmenite	Tons	10,754	102,590	93,993	— 8,597
,, Other sorts	Tons	711	8,900	6,867	— 3,033
Tungsten ore	Tons	384	8,313	4,379	— 3,934
Zinc ore and conc.	Tons	16,891	193,036	165,323	— 27,713
Non-metalliferous mining products:					
Asbestos	Tons	8,528	128,384	100,740	— 27,644
Magnesite	Tons	1,322	21,601	22,697	+ 1,076
Sulphur	Tons	13,450	407,179	196,828	— 210,351

*Excluding bismuth alloys. †Including cupreous iron pyrites.
**The figures for 1953 are not completely comparable with those for the previous year.

OTHER LONDON PRICES — FEBRUARY 4

ANTIMONY

English (99%) delivered, 10 cwt. and over .. .. £210 per ton
Crude (70%) .. .. .. £200 per ton
Ore (60% basis) .. .. .. 22s./24s. nom. per unit, c.i.f.

NICKEL

99.5% (home trade) .. .. £483 per ton

OTHER METALS

Aluminium, 99·5% £156 per ton
Bismuth (min. 4 cwt. lots) 16s. lb.
Cadmium (Empire), 13s. 10d./14s. 4d. lb.
Chromium, 6s. 5d./7s. 6d. lb.
Cobalt, 20s. lb.
Gold, 248s. f.oz.
Iridium, £60 oz. nom.
Magnesium, 2s. 10½d. lb.
Manganese Metal (96%-98%) £225/£262
Osmiridium, £40 oz. nom.
Osmium, £65/£70 oz. nom.
Palladium, £7 15s./£8 10s. oz.
Platinum, £30/£33
Rhodium, £42 10s. oz.
Ruthenium, £25 oz.
Quicksilver, £63 10s./£64 10s. ex-warehouse
Selenium, 30s. 6d. nom. per lb.
Silver 73¼d. f.oz. spot and f'd.
Tellurium, 15s./16s. lb.

ORES, ALLOYS, ETC.

Bismuth .. .. 40% 6s. 3d. lb. c.i.f.
30% 5s. 0d. lb. c.i.f.
Chrome Ore—
Rhodesian Metallurgical (lumpy) £14 5s. 6d. per ton c.i.f.
,, ,, (concentrates) £14 5s. 6d. per ton c.i.f.
,, ,, Refractory £13 17s. 6d. per ton c.i.f.
Baluchistan Metallurgical .. £15 19s. 6d. per ton c.i.f.
Magnesite, ground calcined .. £26 - £27 d/d
Magnesite, Raw .. .. .. £10 - £11 d/d
Molybdenite (85% basis) .. 102s. 4d.-103s. per unit c.i.f.
Wolfram (65%) .. .. .. World buying 125s. nom.
,, ... 145s. nom. U.K. Selling
Scheelite (65%) .. .. .. World buying price nom.
,, ... 140s. nom. U.K. Selling
Tungsten Metal Powder .. .. 13s. 8d. nom. per lb. (home)
(98% Min. W.)
Ferro-tungsten .. .. .. 10s. 8d. nom. per lb. (home)
Carbide, 4-cwt. lots .. .. £35 13s. 9d. d/d per ton
Ferro-manganese, home .. .. £53 10s. 0d. per ton
Manganese Ore Indian c.i.f. Europe (46% - 48%) .. .. .. 7s. 11d. - 8s. 4d. per unit
Brass Wire .. .. 2s. 4½d. per lb. basis
Brass Tubes, solid drawn .. 1s. 8½d. per lb. basis

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

Kaffirs entered a quiet period after their recent sharp rise. The report of the Randall Commission in the United States killed hopes of a higher price of gold in the immediate future. It is thought, however, that the Eden-Butler mission emphasized the importance of such a move to the sterling area reserves and President Eisenhower's policy of monetary control of any recession will encourage the long term view.

Among finance houses, Vereeniging Estates have raised the total annual dividend to 30 per cent; the shares rose in sympathy. West Rand Investment Trust are paying 15 per cent for the year against 13¾ per cent in 1952. The profit comes out £270,000 higher. This disappointed some of the optimists but the results can be regarded as solid and satisfactory and give good hopes for the future.

Orange Free State shares mostly improved. More interest has been shown in the prospects of Free State Geduld due to the results from the enriched area bordering Western Holdings. The shares are to have a quotation in Paris. The two President mines also went ahead, particularly President Brand. The favourable lease terms enjoyed by these properties have been compared with other Orange Free State mines. It is thought that St. Helena may have at last turned the corner and other features were quiet buying of Loraine and the fall in Welkom due to disappointment with the monthly returns.

The good development results announced by Ashanti on the 35th level were offset by the poor figures. The stronger position of Gold Coast Main Reefs was also ignored by investors and the whole market declined.

St. John d'El Rey again fell on the continuing remittance and exchange difficulties in Brazil.

In the diamond market, Anglo American Investment maintained their annual dividend but the shares slipped despite this satisfactory result. On the other hand, De Beers went ahead sharply. This company now has substantial holdings in the Orange Free State and must have made large profits on its investments during the past weeks. Platinum shares declined despite an increase of £3 in the metal price which had been made to offset higher costs. The uncertain position over further sales by Russia may be to blame.

Copper shares recovered from their lowest level following the Wankie strike which would mean no further supplies of coal from this source. It is thought that the mines have about seven days' supply in hand, in addition to which it is believed that they have substantial stocks of wood fuel. Tanks benefited last year from the better Union Minière results. This company continues to invest substantial sums in the Benguela Railway which will play a large part in the development of Central Africa, and the movement of extra coal to the copper belt.

Eastern tin shares lacked interest and fell away, but Nigerian producers, led by Amalgamated Tin, improved on this company's greatly increased production of columbite concentrates.

Lead/zinc prices were uncertain. Lake George were the turn better on the resumption of work after the strike, but New Broken Hill were down on news that the company is to raise a substantial sum of money by the issue of unsecured loan stock. This is to be divided between convertible and non-convertible stock.

Asbestos shares improved, as did also Associated Manganese and Consolidated Murchison. South African Collieries were also harder on the improved market outlook. Wankie, as was to be expected, turned easier but steadied after the quick action by the Southern Rhodesia Government. The strike on this property is something of a mystery; it is understood that no demands have been made by the strikers and no leaders have appeared. The mechanized portion of the mine is continuing operations with European miners.

FINANCE	Price Feb. 3	+ or — on week
African & European	2 11/32	
Anglo American Corpn.	6 1/16	+ 1/16
Anglo-French	20/9	—3d
Anglo Transvaal Consol.	22/6	—1/3
Central Mining (£1 shrs.)	30/-	
Consolidated Goldfields	50/-	—1/3
Consol. Mines Selection	33/1¼	+2/6
East Rand Consols	3/10½	
General Mining	4	
H.E. Prop	38/9	—1/3
Henderson's Transvaal	8/6	+6d
Johannies	49/-	—1/6
Rand Mines	3 1/16	
Rand Selection	36/3	+7½d
Strathmore Consol.	35/-	
Union Corp. (2/6 units)	30/-	+1/6
Vereeniging Estates	4 1/16	+ 1/16
Writs	35/-	—7½d
West Wits	40/-	—1/3
RAND GOLD		
Blyvoors	34/-	
Brakpan	8/6	—9d
City Deep	17/6	
Consol. Main Reef	16/3	—7½d
Crown	37/6	+7½d
Daggas	3⅜	
Doornfontein	26/3	—3d
Durban Deep	35/-	
E. Daggas	12/6	
E. Geduld .. (4/- units)	26/9	+3d
E. Rand Props	2⅜	
Geduld	3⅜	
Govt. Areas	10/9	—6d
Grootvlei	20/-	+6d
Libanon	9/-	+6d
Luipaards Vlei	24/6	—3d
Marievale	18/3	
Modderfontein East	13/9	
New Kleinfontein	15/7½	
New Pioneer	19/6	
Randfontein	72/-	+9d
Robinson Deep	10/6	
Rose Deep	14/4½	
Simmer & Jack	4/3	—4½d
S.A. Lands	20/-	—1/3
Springs	5/9	+4½d
Stilfontein	27/9	—6d
Sub Nigel	34/4½	
Van Dyk	5/-	—3d
Venterspost	13/-	+6d
Vlakfontein	13/9	+3d
Vogelstruisbult	34/6	+3d
West Driefontein	5½	—⅛
W. Rand Consolidated	2 11/16	
Western Reefs	2 1/16	—⅛

O.F.S.	Price Feb. 3	+ or — on week
Freddies	9/9	—3d
Freddies N.	10/1½	+1½d
Freddies S.	9/3	
F. S. Geduld	4⅛	—⅛
Geoffries	17/6	—1½d
Harmony	29/1½	—4½d
Loraine	12/7½	+10½d
Lydenburg Estates	15/9	+9d
Merriespruit	9/4½	
Middle Wits	16/9	+3d
Ofsits	51/10½	—7½d
President Brand	44/6	+5/-
President Steyn	29/3	+1/-
St. Helena	17/10½	+4½d
Virginia Ord.	14/-	—6d
Welkom	17/6	—1/6
Western Holdings	4 1/16	—⅛
WEST AFRICAN GOLD		
Amalgamated Banket	1/7½	
Ariston	5/6XD	—3d
Ashanti	20/6	—3d
Bibiani	4/6	—4½d
Bremang	2/1½	—1½d
G.C. Main Reef	3/4½	
G.C. Selection Trust	6/4½	—1½d
Konongo	2/3	—1½d
Lyndhurst Deep	1/-	
Marlu	1/4½	—1½d
Taquah & Abosso	2/6	
AUSTRALIAN GOLD		
Boulder Perseverance	3/-	
Gold Mines of Kalgoorlie	13/6	—3d
Great Boulder Prop.	8/6	—3d
Lake View and Star	13/6	—6d
Mount Morgan	18/9	+3d
North Kalgurli	6/9	+3d
Sons of Gwalia	5/6	
South Kalgurli	6/9	
Western Mining	11/9	—9d
MISCELLANEOUS GOLD		
Cam and Motor	9/3	
Champion Reef	4/10½	+1½d
Falcon Mines	7/9	—7½d
Globe & Phoenix	23/-	
G.F. Rhodesian	6/1½	
London & Rhodesian	4/6	—1½d
Motapa	2/3	—3d
Mysore	5/-	—1½d
Nundydroog	6/-	
Ooregum	3/3	—1½d
Oroville	16/6	

MISCELLANEOUS GOLD (contd.)	Price Feb. 3	+ or — on week
St. John d'El Rey	19/9	—9d
Zams	32/3	+3d
DIAMONDS & PLATINUM		
Anglo American Inv.	4 11/32	—3/32
Casts	20/6	
Cons. Diam. of S.W.A.	4⅞	
De Beers Defd. Bearer	77/9	+1/6
De Beers Pfd. Bearer	15⅜	—⅛
Potgs Platinum	9/3	—1½d
Waterval	15/-	—6d
COPPER		
Chartered	56/-	—4½d
Esperanza	6/7½	—1½d
Indian Copper	4/3	+3d
Messina	3 1/16	+ 1/16
Nchanga	6½	+ 1/16
Rhod. Anglo-American	49/-	+3d
Rhod. Katanga	15/6	+10½d
Rhodesian Selection	14/3	
Rhokana	18⅛	+ ⅛
Rio Tinto	19	+ ⅛
Roan Antelope	14/6	+1½d
Selection Trust	36/-	—3d
Tanks	56/-	—3d
Tharsis Sulphur Br.	46/3	
TIN (Eastern)		
Ayer Hitam	24/4½	—1½d
Bangrin	8/-	
Gopeng	7/3	—3d
Hongkong	6/-	
Ipoh	15/-	
Kamunting	8/3	
Kepong Dredging	4/3	
Kinta Tin Mines	10/3	—3d
Malayan Dredging	26/-	—3d
Pahang	11/6	—3d
Pengkalen	7/3	—6d
Petaling	7/9	—3d
Rambutan	12/-	
Siamese Tin	7/1½	—1½d
Southern Kinta	13/1½	—1½d
S. Malayan	23/-	—3d
S. Tronoh	7/6	
Sungei Kinta	10/-	
Tekka Taiping	5/6	—1½d
Tronoh	21/9	—6d
TIN (Nigerian and Miscellaneous)		
Amalgamated Tin	11/6	+6d
Beralt Tin	17/10½	+1½d
Bisichi	4/9	+1½d
British Tin Inv.	13/6	
Ex-Lands Nigeria	2/7½	—3d

TIN (Nigerian and Miscellaneous) contd.	Price Feb. 3	+ or — on week
Geevor Tin	9/7½	+1½d
Gold & Base Metal	2/10½	—1½d
Jantar Nigeria	7/3	—1½d
Jos Tin Area	13/3	+3d
Kaduna Prospectors	2/1½XD	
Kaduna Syndicate	2/-XD	
London Tin	5/6	+1½d
United Tin	3/1½	
SILVER, LEAD, ZINC		
Broken Hill South	4⅛/10½	+7½d
Burma Mines	1/9	
Consol. Zinc	28/10½	—4½d
Lake George	6/7½	+1½d
Mount Isa	32/-	—6d
New Broken Hill	21/3	—1/3
North Broken Hill	2 13/16	+ 1/16
Rhodesian Broken Hill	8/6	
San Francisco Mines	16/-	
Uruwira	2/9	—1½d
MISCELLANEOUS		
BASE METALS & COAL		
Amal. Collieries of S.A.	41/-	+9d
Associated Manganese	45/6	+3/3
Cape Asbestos	25/7½	+1/1½
C.P. Manganese	56/10½	—1/1½
Consol. Murchison	36/3	+3/3
Mashaba	3d.	
Natal Navigation	2 11/16	
Rhod. Monteleo	1/3	
Turner & Newall	74/-	+6d
Wankie	13/6	—6d
Witbank Colliery	3 11/16	+ 1/16
CANADIAN MINES		
Dome	$28½	
Hollinger	$24½	
Hudson Bay Mining	$75	+2½
International Nickel	$67	+1½
Mining Corpn. of Canada	£4	
Noranda	$111	—3
Quemont	£5⅛	+⅛
Yukon	4/-	
OIL		
Anglo-Iranian	9 1/16	+ 1/16
Apex	43/9	
Attock	37/6XD	+1/10½
Burmah	61/10½	+3/1½
Canadian Eagle	29/3	+1/3
Mexican Eagle	19/9	
Shell (bearer)	5 1/16	+ 1/16
Trinidad Leasehold	19/10½	+7½d
T.P.D.	27/3	
Ultramar	28/7½	+7½d

A REVIEW OF THE RAND AND O.F.S. QUARTERLIES

The comprehensive statistical presentation of the Rand and Orange Free State Gold Mines quarterly results referred to in our issue of January 22 appears below.

The primary object of the table is to provide investors, actual and potential, with the data necessary for a periodic assessment of each producing mine's technical strength and earning power. Accordingly, the results have been compiled in cumulative and comparative form based on published information in respect of the company's financial year. Thus the current quarterly results have been collated along with the preceding quarterly figures published, so that what emerges is a trend of the progress made by each producing mine since the end of its financial year. Therefore, to obtain the maximum benefit from the table it should be read in conjunction with the latest quarterlies published.

One point which should be understood is that all cost and profit figures falling under the heading "development and milling results" are arrived at by the use of cumulative weighted averages. This method is particularly useful when applied to development results of companies working two or more reefs as it puts into proper focus the total footage accomplished and the overall values obtained which, viewed on any other basis, may well present a distorted picture of the companies' progress. Weighted averages have also been applied to figures representing costs per ton milled which is based on the tonnage milled each quarter and similarly to the cost and profit per ounce of gold produced which is based on the ounces of gold extracted quarter by quarter.

Particular significance should be attached to the profit per ounce and cost per ounce figures as they reflect the effect on cost structure of the mines of crushing a higher or lower grade of ore and also provide a pointer to the impact of costs incurred in the treatment plant. Earnings per share are shown on a cumulative basis and take into account not only working profit but also gold premium revenue, uranium revenue and taxation incurred during the year which are shown separately. Also included in the net profit, after tax, are items of sundry revenue and expenditure.

Thus we believe that the table provides a reasonably accurate guide to the companies' progress and with regard to those companies whose financial year ended last December it foreshadows fairly accurately the contents of the profit and loss accounts which should be published in about two months' time. However, in this connection it is stressed that all figures published during the year are subject to adjustments pending their final audit. Nevertheless, in the case of companies which belong to the large mining groups, results may not be materially different.

Conspicuous by their absence from the table are Freddies' North and Freddies' South, Doornfontein, and Western Holdings whose exclusion from the table has been made because we believe there is not sufficient data available at this stage in their career to provide a reasonable basis for assessing their progress. Developing mines, of course, are also excluded.

Central Mining-Rand Mines Group.—Profits after tax are without exception down so far as can be seen from the table. This comment is, of course, only final in the case of the December companies, while companies whose financial years end in June have six months in hand. Premium revenue stands out clearly as representing a drop in earnings for every mine in the group which is substantial in the cases of the smaller mines.

Dividends show only two increases but the majority are maintained. Except in the case of Transvaal G.M.E. and Crown Mines profits per ounce show decreases and profits per ton with the same exceptions are down. City Deep development shows a marked increase and Consol M.R. a large drop. The development footage at Crown Mines and Rose Deep have also fallen considerably. The most substantial change in values is in Consol M.R. where values have risen from 266 to 442 in. dwt. Again, as in the other groups, effects of premium revenue falls, are clearly shown.

Anglo American Corporation. — December quarterly results published by the Anglo American Corporation group contained some of the best results announced since underground development commenced in the Orange Free State. Western Holdings, from a box-hole in a crosscut driven towards the Free State Geduld boundary, reported values of 7,518 in. dwt., although this result was obtained after December 31, so that its impact is not reflected in the development results given in the table below. Western Reefs announced its first profits from uranium production which exceeded that yielded from gold mining. Daggafontein's uranium profits reached the figure of £605,000 for nine months' production.

Apart from these signficant results, premium revenue decreases have accounted for fairly substantial reductions of earnings of some of the companies in the group, particularly Springs which has, incidentally, been forced to cut its dividend back by half and is now only barely covered by earnings. Development results for the group showed mixed results, with increases and decreases ranging up to 25 per cent. Footage payable, however, has remained much the same in the case of all mines but some payability values have improved considerably.

Costs per ounce produced all show increases. Welkom excepted, which has remained virtually the same. Generally speaking, profits after tax are down, particularly in the cases of East Daggas, South African Lands and Springs, and where dividends have not been maintained there have been reductions. Tonnages milled have all fallen to some extent, again with the exception of Welkom which raised its throughput from 608,000 tons to 760,000 tons.

Consolidated Goldfields.—Payability again remained at 100 per cent at West Driefontein where the Carbon Leader Reef has proved to be fully payable ever since underground development stared; values also show a considerable increase. Doornfontein's payability increases provided an unexpected surprise together with satisfactory values. This mine, as stated above, has not been included in the table not having been in production long enough for the figures to become sufficiently representative.

Looking at the group as a whole costs per ton will be seen to be on the upgrade with tonnages milled showing some increases and an upgrading in the milling rates of some mines. The fall in free gold prices has resulted in decreases in premium revenue which has proved so valuable in the past in offsetting rises in working costs.

Union Corporation. — Perhaps the most outstanding news from this group concerns St. Helena's ore reserves which are shown below at the new level of 2,000,000 tons at a value of 5.3 dwt. This marks an increase over the previous figure of 750,000 tons of the same value. For the other mines tonnage milled shows only two increases and decreases while one or two milling grades have moved slightly upwards. Taking the overall cost and profit position profits per ounce and ton moved downwards together with net profits after tax which in four cases can be seen to be a good deal lower, revenue from gold premium being approximately halved in most cases. Dividends in December were held at virtually the same levels, being covered in all cases by earnings.

"Johnnies" Group.—There has been a sharp drop in the footage advanced at Freddies North during the December quarter, 545 ft. being sampled against 2,355 ft. in the previous quarter. Payability also fell to 79 per cent from the previous figure of 88 per cent. Freddies South shows payability at 63 per cent which is much the same as in the September quarter with 1,740 ft. sampled against 1,430. These mines will not be included in the tables until the figures provided become more representative.

From the table it can be seen that net profits after tax have fallen, resulting in the case of East Champ d'Or in a loss, with the December dividend passed. While mill grades remained very much the same, ounces recovered varied with the tonnage milled which show some fairly large fluctuations. Profit per ounce has decreased in every case.

Development results show a large gain in payability for East Champ d'Or and New State with values similar to those of last year.

General Mining. — Uranium profits from West Rand Consolidated have been taken on the old basis of accounting and as shown in the table amounts to £806,400, the highest yet achieved by any mine. This profit represents a full year's operations. The final dividend for this mine has been raised to 2s. a share compared with 1s. 6d. last December. Working profits, being for gold only, have fallen considerably which is perhaps understandable owing to the fact that the mine is taking advantage of uranium operations to mine lower grade ore. This is reflected in the lower milling grade, profits per ounce and ton

and higher cost per ounce. The interim dividend from South Roodeport remained the same with working profit lower and costs per ounce and ton higher.

Anglo-Transvaal.—Rand Leases profits per ounce and per ton have suffered a severe drop in the six months shown in the table and this together with increased costs and a smaller tonnage milled have reduced the working profit to a very low level. The fall in premium revenue has been of particular consequence to this mine which has been forced to declare an interim lividend of 3d. compared with 1s. 0d. last December.

Miscellaneous. — Of the mines falling under the heading "others," Stilfontein produced some interesting results quite apart from announcing its initial earning from uranium production. Average monthly crushings during the last quarter reached 70,000 tons compared with an average of 65,000 tons per month over the whole year and extensions to the reduction plant to increase crushing capacity to 90,000 tons per month are practically completed.

Wit Nigel whose results represent six months' operations is maintaining its performance at much the same pace as in the preceding year although the same comment cannot be said to apply to Nigel Gold whose year end total figures—unless there are substantial adjustments to be made—will show a loss.

FINANCIAL RESULTS

(Cumulative and Comparative "this" financial year with "last.")

GROUP	COMPANY	ORDINARY SHARES IN ISSUE	Year ends	PROFIT AND LOSS RESULTS £(000)										EARNINGS, DIVIDENDS AND YIELD PER SHARE							Current Financial Year's Capital Expenditure †
				Working Profit		Premium Revenue		Uranium Profit		Govt.'s Share		Net Profit After Tax*		Earned in current year to date‡	Paid				Yield on Price 1/1/54	
															1952		1953			
				This	Last	This	Last	This	Last	This	Last	This	Last		June	Dec.	June	Dec.		
															s. d.	s. d.	s. d.	s. d.	(o/o)	£(000)
Gold Fields	Libanon	7,937,300 (10/-)	J	263·7	253·1	9·7	24·6	—	—	—	—	269·1	274·4	8d.	3	3	3	3	5·4	222·0
	Luipaards Vlei	4,969,105 (2/-)	J	244·1	297·0	9·6	31·4	—	—	—	—	247·9	333·9	1/-	7	7½	7½	7½	5·0	62·6
	Rietfontein	1,122,252 (5/-)	D	299·7	327·9	12·1	23·9	—	—	144·8	177·5	165·6	173·2	2/11	1 3	1 4½	1 3	1 4½	14·0	13·6
	Robinson	2,000,000 'a'(7/6)	D	158·6	145·4	37·2	74·4	—	—	8·9	48·4	195·1	215·7	1/11	6	9	9	9	14·0	21·8
	Simmer & Jack	6,750,000 (2/6)	D	153·2	190·7	38·7	80·4	—	—	11·1	11·2	181·0	267·2	6d.	3	4	4	4	15·2	20·6
	Sub Nigel	1,771,875 (10/-)	J	611·5	703·6	11·9	35·7	—	—	290·7	368·9	332·5	375·2	4/2	4 0	4 0	4 0	3 9	22·1	6·3
	Venterspost	4,900,000 (10/-)	J	338·3	364·8	13·4	38·2	—	—	44·0	127·4	299·9	274·0	1/3	6	5	5	5	6·3	192·3
	Vlakfontein	6,000,000 (10/-)	D	865·2	940·4	26·7	55·3	—	—	315·2	412·2	573·4	581·3	1/11	8	8	6½	6½	7·7	345·1
	Vogels	5,028,571 (10/-)	D	1208·2	1016·8	50·9	82·3	—	—	395·6	421·1	858·7	675·0	3/5	1 0	1 0	1 1½	1 1½	6·4	47·1
	West Drie	7,041,080 (10/-)	J	1547·1	753·0	16·7	23·7	—	—	479·0	30·0	1082·2	716·7	3/1	—	—	6	9	1·0	907·2
Anglo American	Brakpan	4,600,000 (5/-)	D	271·2	421·4	45·7	83·9	—	—	59·8	175·0	257·1	330·3	1/1	7½	9	6	6	10·8	47·8
	Daggas	7,000,000 (5/-)	D	3901·2	4646·1	103·4	217·9	605·0	—	2048·0	2331·0	2561·6	2533·0	7/4	3 0	3 0	3 0	3 0	8·1	903·1
	East Daggas	3,730,000 (10/-)	D	582·8	732·4	34·2	69·8	—	—	279·6	385·9	337·4	416·3	1/10	1 1½	1 0	9	10½	12·0	2·8
	S.A. Lands	2,475,000 (3/6)	D	620·1	819·2	38·5	76·1	—	—	269·4	393·7	389·2	501·6	3/2	1 9	1 9	1 3	1 6	13·3	31·3
	Springs	10,110,000 (5/-)	D	120·8	224·8	42·7	88·1	—	—	9·0	19·1	154·5	293·8	3½d.	3	3	1½	1½	4·0	4·3
	Welkom	10,000,000 (5/-)	D	122·9	L 15·0	23·8	15·5	—	—	—	—	146·7	·5	3½d.	—	—	—	—	—	1037·7
	W. Reef Ex.	7,000,000 (5/-)	D	934·7	1214·5	47·4	87·7	228·0	—	—	·7	1210·1	1301·4	3/6	1 3	1 3	1 3	1 3	4·3	2134·7
Central Mining	Blyvoor	24,000,000 (2/6)	J	2886·8	3302·3	31·4	99·2	242·1	—	1458·3	1563·0	1710·6	1859·9	1/5	1 6	1 6	1 4	1 4	7·8	270·0
	City Deep	2,026,832 (£1)	D	254·6	311·7	63·6	125·7	—	—	8·5	11·1	347·2	454·2	3/5	1 6	1 0	6	6	6·0	55·6
	Consol. M.R.	1,247,602 (£1)	J	116·8	166·4	13·0	38·9	—	—	4·9	71·7	141·5	175·9	2/3	2 9	2 3	1 9	1 9	21·5	16·2
	Crown	1,886,125 (10/-)	D	519·5	475·9	85·6	172·7	—	—	23·1	14·6	636·8	686·3	6/9	2 6	2 6	2 6	3 0	14·4	CR 66·1
	D. Roodepoort	2,325,000 (10/-)	D	749·2	1007·4	62·1	122·6	—	—	144·9	297·7	681·4	818·3	5/10	2 6	2 0	1 9	1 9	9·8	252·0
	E. Rand Prop.	3,960,000 (10/-)	D	1358·1	1695·5	84·7	175·3	—	—	328·4	496·2	1184·6	1382·2	6/-	2 6	2 6	1 9	1 9	7·3	419·6
	Modder B.	2,800,000 (2/6)	D	23·3	72·1	12·4	23·8	—	—	5·1	30·4	54·2	96·6	5d.	—	—	—	—	—	CR 13·1
	Modder East	930,805 (£1)	J	84·1	135·2	7·1	21·3	—	—	19·2	70·0	79·5	102·9	1/8	2 0	1 6	1 6	1 6	20·0	—
	New Modder	2,800,000 (3/6)	J	5·8	5·8	·8	2·2	—	—	1·2	14·4	7·9	15·6	1d.	—	—	—	—	—	CR ·3
	Rose Deep	700,000 (19/-)	D	105·4	113·4	23·4	43·9	—	—	12·2	22·2	124·7	150·9	3/7	1 9	1 3	—	—	—	9·5
	Transv'l G.M.E.	852,500 (£1)	D	27·1	14·7	10·8	19·3	—	—	5·1	4·6	51·6	53·4	1/2	9	9	6	9	4·8	29·1
	Welgedacht	1,358,030 (10/-)	J	17·1	26·8	2·5	6·5	—	—	—	—	15·7	27·9	3d.	—	—	—	—	—	—
J.C.I.	E. Champ d'Or.	2,079,000 (2/6)	D	L 15·2	94·9	7·7	18·6	—	—	3·0	41·9	L 8·5	75·6	—	3½	3½	2	—	1·7	—
	Govt. G.M.A.	5,600,000 (5/-)	D	497·1	541·0	66·8	127·5	—	—	100·2	130·1	546·7	622·9	1/11	1 0	1 0	1 0	9	15·9	98·4
	New State	1,514,037 (£1)	D	L 4·9	L 4·7	9·5	24·9	—	—	—	—	22·4	38·7	3d.	4½	3	3	3	12·1	—
	Randfontein	4,063,553 (£1)	D	248·4	288·9	78·5	162·9	—	—	—	11·0	400·3	508·0	2/-	9	1 0	1 0	1 0	2·7	24·9
Union Corporation	East Geduld	9,000,000 (4/-)	D	3598·9	4073·3	82·7	162·4	—	—	1982·0	2313·7	1773·2	2005·3	3/11	2 0	2 1	1 9	1 9	13·1	157·6
	Geduld Prop.	1,460,857 (£1)	D	361·2	410·2	31·9	58·4	—	—	91·3	126·3	907·3	1056·5	12/5	6 3	6 3	5 9	5 9	15·6	34·8
	Grootvlei Prop.	11,438,816 (5/-)	D	2723·4	3200·7	82·8	159·8	—	—	1439·2	1759·4	1381·6	1616·3	2/5	1 3	1 3	1 2	1 1	11·5	55·9
	Marievale	4,500,000 (10/-)	D	795·3	843·6	30·8	59·8	—	—	362·8	430·3	464·4	472·4	2/1	10	10	10	11	9·4	30·0
	St. Helena	9,625,000 (10/-)	D	317·3	86·9	26·5	37·1	—	—	—	—	312·7	132·6	8d.	—	—	—	—	—	280·3
	Van Dyk	5,532,000 (10/-)	D	15·1	139·7	28·9	60·9	—	—	—	—	99·2	198·9	4d.	—	—	—	—	—	38·0
Gen. Mng.	S. Roodepoort	1,420,662 (10/-)	J	116·3	135·8	2·3	8·4	—	—	57·0	68·8	67·8	78·9	1/-	9	9	9	9	10·0	6·5
	W. Rand Cons.	4,250,000 (10/-)	D	871·4	1356·4	62·9	130·5	806·4	124·7	459·0	347·0	1410·1	1373·0	6/8	1 6	1 6	1 9	2 0	6·8	188·0
Anglo Tvaal	N. Klerksdorp	600,000 (5/-)	D	3·6	11·1	2·0	4·2	—	—	—	—	3·1	11·9	1d.	—	—	—	—	—	4·9
	Rand Leases	3,600,000 (10/-)	J	58·5	308·4	13·7	40·9	—	—	4·5	94·0	90·7	280·3	6d.	1 4½	1 0	4½	3	6·2	62·4
	Village M.R.	6,068,455 (1/3)	J	72·1	88·7	2·9	8·9	—	—	26·0	40·0	48·7	56·8	2d.	1·8d.	1·8d.	1·8d.	1·5d.	13·1	4·3
Others	N. Kleinfontein	1,735,000 (£1)	D	296·2	373·1	27·4	55·7	—	—	58·7	130·0	253·9	298·8	2/11	7½	7½	1 4½	1 1½	15·4	70·3
	Spaarwater	7,974,968 (5/-)	D	L 34·1	L 29·2	4·7	9·4	—	—	—	—	L 30·1	L 19·8	—	—	—	—	—	—	·4
	Stilfontein	12,208,680 (5/-)	D	1146·6	136·8	37·5	14·5	—	—	—	—	1184·1	148·3	1/11	—	—	—	—	—	1717·1
	Nigel	1,439,269 (10/-)	D	L 8·9	18·2	6·3	11·7	—	—	—	—	L 2·6	29·9	—	—	—	—	—	—	—
	W. Nigel	7,974,720 (2/6)	J	45·4	43·4	2·2	5·0	—	—	—	—	50·1	50·5	1½d.	—	—	—	1½	5·2	8·7

* Includes sundry revenue less sundry expenses
L indicates a loss

† Excluding Capital spent on Uranium production

‡ Calculated on net profit after tax

URANIUM TO PROVIDE STIMULUS

As the majority of mines shown below end their years on December 31 this seems a god opportunity to take a general view of the present year, and the first points which come to mind are, perhaps, uranium and gold premium sales. It is clearly shown in the table what affect the drop in the gold price is having on earnings. For example, Duggafontein shows premium earnings last year of £217,900 against £103,400 this year—but uranium profits of £605,000 against nil last year. The dramatic entry of uranium profits this year has done much to alter the general tone of the S.A. gold industry. Five mines are now producing with 18 more to come.

West Rand Consolidated has provided an excellent example of what the discovery of uranium can do for a low grade mine in terms of life and profits. The company in its recently revised accounting procedure has clearly shown that mining the Bird reef would be unprofitable were it not for uranium, the West Plant having made a working loss of £134,352 for the December quarter recovery of gold being only 1.74 dwt. From profits of £419,084 uranium provides £388,776.

It seems, therefore that uranium coupled with progressively good development results from the O.F.S. should mean an exceptional year, not forgetitng the ever present political risks. To take advantage of this there will no doubt be new flotations in the offing and 1954 may well see the advancement of some of the new properties which have been awaiting more propitious market conditions before being launched.

DEVELOPMENT AND MILLING RESULTS

(Cumulative and Comparative "this" financial year with "last.")

GROUP	COMPANY	Year ends	TOTAL ORE RESERVES			DEVELOPMENT RESULTS						MILL THROUGHPUT													
						Ft. Sampled (000)		Ft. Payable %		Ft. Payable Av. Value (In. dwt.)		Tonnage Tons Milled (000)		Tonnage Cost per Ton		Yield Ounces Recov'd (000)		Yield Mill Grade (dwt.)		Yield Cost per ounce		Profit Per ton		Profit Per oz.	
			Tons (000)	Value (dwt.)	Stope Width (in.)	This	Last	This	Last	This	Last	This	Last	This	Last	This	Last	This	Last	This	Last	This	Last	Ths	Last
Gold Feild	Libanon	J	1,810	4·5	57·4	12·4	14·5	62	62	306	310	513	497	40/4	39/9	103·8	99·4	4·0	4·0	197/8	198/10	10/3	10/2	50/9	50/11
	Luipaards Vlei	J	2,338	4·4	42·6	14·3	14·2	61	60	226	251	631	607	38/4	37/6	116·9	114·8	3·7	3·8	206/3	198/3	7/8	9/9	41/9	51/9
	Rietfontein	D	424	5·2	50·5	9·8	9·2	46	42	362	329	322	325	36/7	35/1	71·9	72·1	4·5	4·4	164/4	158/1	18/7	20/2	83/5	90/11
	Robinson	D	1,351	4·5	51·7	11·7	11·8	48	51	393	367	1,165	1,331	46/1	39/10	229·1	224·2	3·9	3·4	235/4	236/7	2/9	2/3	13/10	12/11
	Simmer & Jack	D	1,610	3·9	47·2	27·9	24·1	36	42	272	332	1,488	1,486	37/8	37/4	238·3	237·4	3·2	3·2	235/2	233/6	2/1	2/6	12/10	16/-
	Sub Nigel	J	1,715	8·2	36·4	17·3	18·9	25	32	351	380	399	398	51/10	50/6	132·5	136·8	6·6	6·9	154/8	146/11	30/7	35/4	92/3	102/10
	Venterspost	J	2,496	5·6	54·9	14·0	19·8	51	43	348	365	629	616	47/7	46/-	147·6	142·8	4·7	4·6	202/6	198/10	10/9	11/11	45/10	51/1
	Vlakfontein	D	1,358	8·4	41·2	28·8	32·4	35	29	347	324	446	447	50/8	50/-	161·0	165·1	7·2	7·4	140/5	135/5	38/9	42/1	107/6	13/10
	Vogels	D	3,189	5·5	42·3	34·9	34·5	44	51	285	301	1,180	990	42/3	44/7	298·0	257·7	5·0	5·2	167/5	171/4	20/6	20/6	81/1	78/11
	West Drei	J	—	—	—	6·5	5·0	100	100	839	735	267	161	65/2	64/-	194·7	101·7	14·6	12·6	89/5	101/3	115/11	93/7	158/11	148/1
Anglo American	Brakpan	D	3,548	4·7	44·8	45·9	52·6	28	28	740	555	1,377	1,419	40/4	38/10	246·3	255·0	3·6	3·6	225/7	215/11	4/-	5/11	22/-	33/1
	Daggas	D	13,777	5·5	43·8	54·8	51·5	48	47	381	408	2,609	2,788	28/5	25/11	613·9	633·0	4·7	4·8	120/8	109/-	29/11	33/4	127/1	140/1
	East Daggas	D	4,332	4·3	36·9	41·2	45·4	21	25	253	238	1,104	1,140	32/3	31/6	190·9	202·7	3·5	3·6	186/8	177/-	10/7	12/10	61/1	72/4
	S.A. Lands	D	3,198	5·2	41·6	35·6	47·7	36	38	482	416	1,204	1,317	34/11	32/4	219·8	237·0	3·6	3·6	191/2	179/10	10/4	12/5	56/5	69/2
	Springs	D	2,764	4·6	43·5	23·7	29·9	36	36	495	344	1,735	1,954	32/9	30/8	238·9	258·7	2·7	2·6	237/7	231/10	1/4	2/4	10/2	17/5
	Welkom	D	1,305	5·0	49·3	17·8	16·6	63	61	363	390	760	608	45/2	43/3	148·5	106·1	3·9	3·5	231/3	230/3	3/3	L 3/8	16/7	L 19/5
	W. Reef Ex.	D	4,763	4·9	47·5	45·5	38·8	54	43	479	359	1,312	1,345	36/2	33/11	267·1	280·3	4·0	4·2	177/10	162/8	14/3	18/1	70/-	86/8
General Mining	Blyvoor	J	6,864	12·4	46·3	6·4	7·5	89	95	532	598	596	633	49/11	46/9	352·3	382·3	11·8	12·1	84/5	77/6	96/11	104/4	163/11	172/9
	City Deep	D	5,700	5·8	42·7	37·2	23·7	35	32	282	299	1,922	1,851	45/3	47/3	371·0	375·7	3·9	4·1	234/2	232/9	2/8	3/4	13/9	16/7
	Consol. M.R.	J	3,983	3·7	52·3	8·5	18·5	39	38	442	266	1,011	1,099	32/2	31/6	140·6	152·0	2·8	2·8	231/6	227/11	2/3	3/1	16/7	21/10
	Crown	D	12,208	4·9	48·4	45·3	56·4	59	52	386	330	3,272	3,253	36/1	36/10	518·6	518·2	3·2	3·2	227/8	231/-	3/2	2/11	20/1	18/4
	D. Roodepoort	D	8,451	4·3	59·4	41·6	46·4	73	65	349	308	2,143	2,168	34/4	33/7	357·8	372·3	3·3	3·4	206/-	195/6	7/-	9/3	41/11	54/1
	East Rand Prop	D	7,987	5·3	48·5	16·1	16·3	65	68	371	393	2,273	2,451	43/4	40/-	506·6	528·6	4·4	4·3	194/5	185/5	12/-	13/10	53/7	64/2
	Modder B.	D	336	3·9	51·9	—	—	—	—	—	—	651	675	25/11	25/7	69·7	74·5	2·1	2·2	242/3	231/7	9d.	2/2	6/8	19/4
	Modder East	J	2,904	3·0	44·1	4·3	5·7	31	20	166	174	685	701	26/1	25/1	78·3	80·9	2·3	2·3	227/8	217/4	2/5	3/11	21/6	33/5
	New Modder	J	—	—	—	—	—	—	—	—	—	48	46	37/7	38/1	7·8	7·5	3·2	3·2	233/8	235/1	2/4	2/7	14/10	15/7
	Rose Deep	D	1,394	3·9	58·6	14·4	31·2	37	38	347	328	865	983	34/7	32/8	129·3	137·7	3·0	2·8	231/8	233/-	2/5	2/4	16/6	16/6
	Tr'sv'l G.M.E.	D	225	7·9	—	8·6	10·1	38	43	234	345	319	331	51/8	47/4	65·5	62·6	4·1	3·8	251/6	250/-	1/8	11d.	8/3	4/8
	Welgedacht	J	511	2·8	37·9	2·2	2·0	34	32	131	130	203	204	29/1	28/1	25·0	24·9	2·5	2·4	235/5	229/9	1/9	2/7	13/8	21/6
J.I.C.	E. Champ d'Or	D	76	3·4	51·0	2·3	3·0	72	52	204	201	285	356	38/8	33/2	43·4	55·0	3·0	3·1	254/2	214/2	L 6d.	5/4	L 7/-	34/6
	Govt. G.M.A.	D	7,024	2·9	58·0	19·8	31·5	52	58	244	224	2,952	2,943	29/10	29/1	396·5	387·7	2·7	2·6	222/-	220/9	3/5	3/8	25/-	27/11
	New State	D	—	—	—	2·3	6·5	45	23	272	251	307	543	39/7	34/7	48·5	75·1	3·2	2·8	249/6	250/3	L 4d.	L 2d.	L 2/1	L 1/4
	Randfontein	D	3,150	3·2	52·0	26·5	39·2	44	39	264	284	3,661	4,127	30/3	28/5	468·2	494·9	2·6	2·4	236/4	236/11	1/5	1/5	10/7	11/8
Union Corporation	East Geduld	D	11,500	5·7	51·0	6·8	10·2	55	39	273	183	1,610	1,725	29/11	27/6	485·3	517·5	6·0	6·0	99/5	91/9	44/8	47/2	148/3	157/5
	Geduld Prop.	D	2,500	3·4	53·0	10·1	11·4	26	22	228	219	1,125	1,253	33/3	29/9	179·3	181·9	3·2	2·9	208/9	204/10	6/5	6/7	40/4	45/1
	Grootvlei Prop	D	16,000	4·6	47·5	34·1	37·4	45	50	211	210	2,203	2,316	28/-	26/4	469·2	501·8	4·3	4·3	131/7	121/4	24/8	27/8	116/1	127/7
	Marievale	D	3,600	5·5	47·0	19·1	20·0	45	38	335	301	749	723	39/4	39/2	183·2	181·2	4·9	5·0	161/-	156/3	21/3	23/4	86/10	93/1
	St. Helena	D	2,000	5·3	51·0	25·7	33·8	53	43	325	312	799	598	42/5	46/6	162·3	118·5	4·1	4·0	208/8	234/6	7/11	2/10	39/1	14/8
	Van Dyk	D	1,300	3·7	42·0	23·9	28·4	26	36	227	229	1,022	1,246	40/1	34/6	169·4	183·6	3·3	2·9	246/1	233/11	1/4	2/3	1/10	15/3
Gen. Mng.	S. Roodepoort	J	1,070	4·7	49·0	9·2	10·6	39	37	290	269	165	164	40/-	39/9	36·1	37·1	4·4	4·5	182/11	175/10	14/1	16/6	64/6	73/2
	W. Rand Cons	D	7,231	3·4	50·0	41·7	36·9	32	53	277	290	2,651	2,624	27/7	27/7	366·1	399·8	2·8	3·0	199/6	180/9	6/7	10/4	47/7	67/10
Anglo T'vaal	N. Klerksdorp	D	187	2·5	49·7	4·5	5·3	46	22	184	145	130	135	32/1	27/4	17·2	15·6	2·6	2·3	243/-	236/-	7d.	1/5	4/3	14/3
	Rand Leases	J	5,397	4·3	44·0	13·9	21·9	47	54	243	246	956	1,079	41/3	36/3	164·2	180·6	3·5	3·3	240/5	217/3	1/3	5/4	7/2	34/2
	Village M.R.	J	—	—	—	—	—	—	—	—	—	205	203	31/2	30/1	31·6	31·6	3·1	3·1	202/6	193/7	7/-	8/9	45/8	56/1
Others	N.Kleinfontein	D	2,945	3·2	47·5	28·4	24·6	42	52	206	211	1,289	1,292	27/4	26/9	165·7	168·1	2·6	2·6	212/8	205/9	4/7	5/9	35/9	44/5
	Spaarwater	D	150	6·2	37·1	13·3	12·0	44	33	268	342	127	127	61/5	60/7	28·9	28·5	4·5	4·5	271/3	269/6	L 5/4	L 4/7	L 23/7	L 20/5
	Stilfontein	D	2,270	7·5	36·0	18·8	70·5	80	84	363	272	780	294	43/6	45/7	229·4	64·7	5·9	4·4	147/11	207/-	29/5	9/4	99/11	69/6
	Nigel	D	287	5·0	30·9	22·8	21·2	28	36	167	174	377	405	37/7	35/3	54·9	56·8	2·9	2·8	258/6	251/1	L 3d.	11d.	L 3/3	6/5
	W. Nigel	J	729	4·4	37·0	5·4	6·3	31	40	254	228	103	101	47/6	47/7	23·5	22·8	4·5	4·5	209/3	211/3	8/9	8/7	38/7	38/1

L indicates a loss

COMPANY NEWS AND VIEWS

G.C. Mains Reef's Progress Fully Maintained

The report and accounts of Gold Coast Main Reef for the year to June 30 last show that the all-round improvement in operations reflected in the previous year was well maintained. A higher grade of ore—and more of it—was put through the mill and gold production also showed an improvement as did recovery which, at 89.35 per cent, was a fraction more than 1 per cent better than the preceding year. The only item in the table immediately below which requires explanation is the steep rise in working costs by 9s. 3d. per ton milled. This was due largely to the 20 per cent wage increase in the wages which was operative throughout the whole year compared with only three months in the preceding year and partly to the increase in power costs which were equivalent to an additional charge of 1s. 7d. per ton milled.

Year to June 30	*Milled (tons)*	*Grade (dwt.)*	*Yield (oz.)*	*Cost per ton** s. d.	*Available Ore Reserves (tons)*	*(dwt.)*
1953	103,633	8.7	40,449	80 1	329,507	8.29
1952	101,775	8.2	36,965	70 10	335,659	8.31
1951	93,609	7.5	30,980	68 8	318,195	8.63

* Including development charges.

The financial results mirror the mine's healthy technical position. The profit before tax of £81,622 provides a better indication of the company's earning power than the taxed profits which, owing to the jump in the company's tax liabilities, was reduced to £36,620 compared with £54,060 in the preceding year. The two interim dividends of 2½ per cent and 5 per cent required a total net amount of £43,878 and thus the carry forward was left at £31,177, compared with £38,435 brought in.

Year to June 30	*Bullion Revenue** £	*Gross Revenue* £	*Mine Costs* £	*Working Profit* £	*Taxation* £	*Dividend* %	*Carry Forward* £
1953	531,851	534,801	381,972	81,622	45,002	7½	31,177
1952	472,700	473,766	327,033	73,681	19,621	7½	38,435
1951	384,034	390,099	284,627	34,413	nil	5	15,206

* Including realisation charges

The results for the first six months of the current year indicate that the mine continues to go from strength to strength the tonnage milled during this period totalling 54,300, yielding 21,817 oz. and a working profit of approximately £64,200, compared with a tonnage throughput of 51,000 yielding 19,319 oz. and a working profit of approximately £59,200.

The balance sheet showed a satisfactory position. Current assets, which include cash resources of £126,293 (£108,595), amounted to £387,571 and compare with current liabilities of £80,102 against £91,134.

Major General W. W. Richards is chairman. Meeting, London, February 24.

Nigel Van Ryn Resume Dividends

Nigel Van Ryn Reefs in an advance profit statement dealing with the financial results for the year ended September 30 last, announced the payment of a dividend 2d. per 3s. share on the issued capital of £169,846. No dividend was paid in the preceding year, the last distribution being 5 per cent on an issued capital of £283,077 for the year ended September 30, 1951.

Profit for the year to September 30, 1953, at £13,908 was slightly higher than that achieved in the preceding year of £13,319. The proposed dividend requires £5,190, the sum of £5,000 was allocated to general reserve, leaving the carry forward at £3,718. In the preceding year provision was made for depreciation of investments amounting to £63,904 leaving an adverse balance to be carried forward of £42,612 which was, however, subsequently written off under the scheme for reduction and reorganization of capital. Major Sir Cyril Entwhistle, chairman.

Barrow Hepburn and Gale Again Pay 25 Per Cent

The preliminary profit statement issued by Barrow Hepburn and Gale, tanners, leather manufacturers and merchants, for the calendar year 1953 showed that the untaxed profit rose sharply from £140,357 to £572,930. However, after adding in a profit of £11,516 (£4,234) realized from the sale of fixed assets; providing £102,449 (£101,250) for depreciation; allocating £50,000 (nil) to stock valuation reserves, and £50,000 (£70,000) to capital reserve; paying out £263,716 (£89,077) in taxation; and providing a further £16,977 (£25,518) for depreciation; the freely available balance for the year was £101,304 against £49,158.

The company is recommending the payment of a final dividend of 15 per cent on the £400,000 issued capital making, with the interim already paid of 10 per cent, a total distribution of 25 per cent, the same as was paid in the three preceding years. This required a total net amount of £99,550 (£95,025) leaving the carry forward at £303,466 compared with £301,712 brought in.

Mr. G. W. Odey is chairman. The accounts will be issued on February 24 and the meeting held in London on March 19.

New Broken Hill Loan Stock

The underwriting has been completed for an issue by New Broken Hill Consolidated of £1,000,000 5½ per cent Unsecured Loan stock, 1956-65 at 100 per cent. The stock is divided into £500,000 Convertible and £500,000 Non-convertible stock, and the Convertible stock will entitle the holders to convert at any time up to November 30, 1958, into 5s. shares of the company on the basis of four shares for each £5 of stock held.

The proceeds of the issue are required to complete the equipment and development of this well-known Australian lead-zinc-silver producer, to attain an increased annual production estimated to reach 540,000 tons of ore in 1956, compared with 330,000 tons envisaged in the original expansion programme.

The prospectus will be posted tomorrow with preferential application forms to shareholders of the company and to ordinary shareholders of the Consolidated Zinc Corporation and it will be available to the public on February 12.

With the shares currently quoted on the London Stock Exchange at 21s. 6d., the option to convert is not attractive at present as its exercising would be equivalent to paying 25s. per share. However, in view of the envisaged expansion in production, the potential value of the options may be considerable before the expiry date, November 30, 1958.

"Australians" Affected by Holidays in December

Harrietville (Tronoh) the Western Australian gold dredging company appears in our list for the first time and it is unfortunate that its first appearance should coincide with a period in which its dredge was in operation for only one week which accounts for the disappointing result. However, the company's return for the next four weekly period ended, be it noted, on January 16, showed the highest recovery and profit this year, the total number of oz. recovered being approximately 900 valued at £A13,700. The same number of oz. were recovered on two separate occasions in the previous year and both times the profit figure was given as £A15,500. The decline from this figure reported this year may possible be wholly due to the fact that work stopped for six days for holidays and maintenance.

Holidays and maintenance also robbed Morning Star of six days work which resulted in the lowest tonnage throughput and recovery in any four weekly period this year. Central Victoria Dredging showed an improvement over last month's disappointing return and the company's return for the four weekly period ended January 26 discloses a record number of cu. yd. dredged and oz. of gold recovered, the figures being 245,800 cu. yd. yielding 1,080 oz. the best since we have been keeping records. Gold Mines of Kalgoorlie announced good results as did Boulder Perseverance and Sons of Gwalia.

AUSTRALIAN GOLD RETURNS - DECEMBER

Company	*4 weeks to December 29*		*4 weekly period since year-end*	*Current Financial Year Total to date*		*Last Financial Year Total to date*	
	Tons (000)	*Yield (oz.)*		*Tons (000)*	*Yield (oz.)*	*Tons (000)*	*Yield (oz.)*
Boulder Perseverance	10·4	2,569	10	100·9	24,883	100·5	22,745
Central Norseman	12·0	5,623	10	118·7	57,392	124·7	62,235
Central Victoria*	226·8*	795	10	2110·9*	7,351	1721·9*	8,540
Golden Horse Shoe	79·0	809	12	928·3	9,244	922·5	9,767
G.M's of Kalgoorlie	14·6	4,194	10	150·0	43,578	133·9	37,140
Harrietville (Tronoh) †	£A 3·4	0·2	6	£A 51·4	3·2	£A 49·2	3·2
Morning Star‡	1·1	822	10	13·9	13,931	16·5	10,309
New Coolgardie	5·5	2,511	10	53·8	25,091	49·4	25,943
North Kalgurli	19·0	4,146	13	264·2	60,929	238·1	60 375
Sons of Gwalia	7·6	1,837	13	112·6	25,885	95·3	23,768
South Kalgurli	8·8	1,856	10	88·1	17,683	72·6	16,072

* Cu. yd. dredged
† Profit given per £A1000 for 4 weekly period given to December 19
‡ Work stopped for 6 days — holidays and maintenance

TANGANYIKA CONCESSIONS LIMITED

The annual general meeting of Tanganyika Concessions, Ltd., was held on January 28, 1954, in Salisbury, Southern Rhodesia, the **Right Honourable Sir Ulick Alexander, G.C.B., G.C.V.O., C.M.G., O.B.E.,** the chairman, presiding.

The following is an extract from his circulated review :

The profit after taxation amounted to £2,057,914. This is the highest profit the company has ever earned and has enabled your directors to propose the payment of a final dividend of 35 per cent on the Ordinary stock.

Addressing the meeting, the chairman said he thought that while the developments in which their associated company, the Union Miniere du Haut-Katanga, had been engaged in the Belgian Congo since the war were well known to stockholders —and indeed the profitability of this enterprise was clearly reflected in the profit and loss account of their company—what was perhaps less well known was the development programme which their company had at the same time been carrying out in Angola with the Benguela Railway Company.

Few would doubt the importance to-day of the development of Central Africa, a development which had grown rapidly of recent years and showed every indication of increasing at an even greater tempo in the near future. The Benguela Railway was clearly destined, if only by its geographical position, to play a major part in this development, and it was with this in mind, as well as the immediate tasks of serving the needs of Angola and the Belgian Congo, that their Board had formulated their policy in regard to the railway. The programme had indeed been impressive, and one of which they felt they were entitled to be proud. For instance, additional working capital to a total of £1,292,675 had been provided by their company in the seven years ended December 31, 1952. Capital expenditure on improvements to the railway and its carrying capacity financed entirely out of earnings had amounted during this period to £4,021,382. This carried the picture up to the end of 1952 only, the projected capital expenditure of the railway company for the two years ending 1953 and 1954 was £2,822,349.

The financing of this great development in Africa had not been easy, but their Board believed that it would provide in the reasonably near future an adequate return to their company.

The report was adopted.

JOS TIN AREA (NIGERIA), LTD.

The forty-third ordinary general meeting of Jos Tin Area (Nigeria) Ltd. was held on February 3 in London, **Mr. A. B. D. Fox, A.R.C.S.** (the chairman), presiding.

The following are extracts from his circulated statement :

The average amount which we received for the sale of our tin concentrate was £592 per ton as compared with £684 in the previous year. The amount of tin concentrate sold was 157¼ tons as compared with 169¼ tons for the previous year. In addition we sold a small quantity of columbite.

The £592 per ton mentioned above for concentrate represents a metal price of approximately £830 per ton. As against this price for our last financial year, the average mean price for the metal during the current year has been approximately £600 and this level scarcely leaves a margin of profit for your company.

Although no definite decision has yet been reached, meetings are being held to consider the question of tin restriction and it is hoped that some satisfactory solution will be arrived at.

Turning to our investments; the position has continued to improve in spite of the set-back in the mining markets, in which we have a considerable stake. Quoted investmens as at July 31, 1953, stood in the books at £253,385 with a market valuation at that date of £299,523, an appreciation of £46,138 or 18.21 per cent over the book value.

Addressing the meeting, the chairman said :

As regards columbite, we are producing about a quarter of a ton per month from our existing leases. The high price has stimulated the search for this mineral, but I would emphasize that it is only found in association with tin and in some and not all areas.

This company has been aware of the occurrence of columbite since 1916, but it was not until 1936-7 that sales were possible. Now that columbite is a valuable mineral and no longer a worthless and inconvenient impurity its occurrence is watched with greatest care, but there is little or no prospect of additional deposits of any magnitude being found on our existing leases. We shall, of course, continue to produce as much as we can economically.

The report and accounts were adopted.

GOLD & BASE METAL MINES OF NIGERIA, LTD.

INCREASING COLUMBITE PRODUCTION

The nineteenth annual general meeting of Gold & Base Metal Mines of Nigeria, Ltd., was held on January 28, 1954, in London.

Major General W. W. Richards, C.B., C.B.E., M.C. (the Chairman), in the course of his speech said :

Members will no doubt be interested to have some guide as to the result of our operations for 1953.

As already published, production totalled 552 tons of tin concentrates and 93 short tons of columbite, both having an average grade of over 73 per cent.

As regards the financial results for the year, it is estimated that, provided the price of tin does not vary considerably from the present price for the next three or four months, our working profit, before depreciation, interest charge, etc., will be somewhat less than for the previous year, but this could only be expected in view of the heavy fall in the price of tin and the reorganization in the Company's operations previously referred to by me in Nigeria during the year.

An estimate of the position for 1954 is difficult to make, but our target is to increase columbite production by 50 per cent.

MINES DEVELOPMENT SYNDICATE (WEST AFRICA)

I would like to refer to Mines Development Syndicate (West Africa) Ltd., who own the lead-zinc deposits in Southern Nigeria. It is expected that a limited underground development programme will soon be undertaken from existing shafts commencing initially at the Ameri Lode. The object of the programme will be to prove part of the higher grade ore reserves already indicated by diamond drilling. It is confidently expected that the programme covering both Ameri and Nyeba will be completed by the end of 1955 and will place the Syndicate in a position to raise the additional finance necessary for production.

INCREASE OF CAPITAL

Members will be asked to pass a Resolution to effect an increase in the Authorized Capital of the Company. This has been done for one reason only—the flexibility which unissued capital gives to a Company.

I would assure you, however, that there is no intention at present of issuing this additional capital.

The report was adopted and a resolution passed increasing the capital from £600,000 to £1,000,000 by the creation of 3,200,000 shares of 2s. 6d. each.

ALLUVIAL MINING ENGINEER required for Nigeria preferably young man with experience tin. Write with details of experience to Box " F.R." c/o J. W. Vickers & Co. Ltd., 7/8 Great Winchester Street, London, E.C.2.

MINING ASSISTANTS, PROSPECTORS and SURVEYORS required for columbite and tin producing companies in Nigeria. Preferably with tin winning and gravel pumps experience. Two year tours earning four months' leave full pay. Provident Fund, passages provided. Copies only references accompany application. Write, giving full particulars of age, experience, etc., to Box 453, Walter Skinner, Ltd., 20 Copthall Avenue, London, E.C.2.

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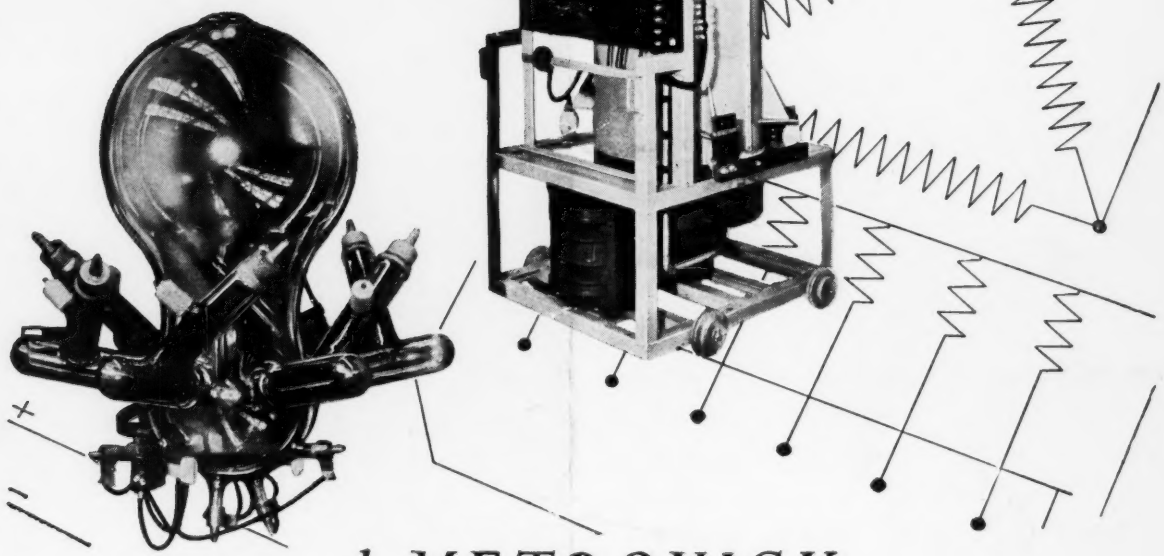

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